10¢ A COPY

The OIL WEEKLY

Exclusively Devoted To The Production and Transportation of Oil and Gas

Engineering News Statistics

November 15, 1929 Volume 55. No. 9

INTERNATIONAL STEEL IDECO DERRICKS (GALVANIZED)

The International Derrick & Equipment Co.

Columbus, Ohio **Los Angeles, Cal.**

Plants: Columbus, Delaware, Ohio; Houston, Beaumont, Texas; Torrance, California. *Sales Offices:* Columbus, Ohio; New York City, N. Y.; Detroit, Michigan; Tulsa, Oklahoma; Fort Worth, Houston, Texas; Shreveport, Louisiana; Wichita, Kansas; Denver, Colorado; Los Angeles, California; Maracaibo, Venezuela. *Warehouses and Yards:* Columbus, Ohio; Tulsa, Seminole, Tonkawa, Drumright, Okemah, Wewoka, Maud, Sasakwa, Allen, Oklahoma City, Oklahoma; El Dorado, Wichita Heights, Kansas; Bakersfield, Taft, Torrance, California; Houston, Big Spring, Odessa, Pyote, Pampa, Borger, Mexia, Luling, Texas; Shreveport, Lake Charles, Louisiana; El Dorado, Smackover, Arkansas.
Export Representation—74 Trinity Place, New York City; Columbus, Ohio; Houston, Texas; Los Angeles, Calif. 414-E

"Trifles make Perfection, but perfection is no Trifle"

Heat Treated BOLTS

One of the "Trifles" that Make PERFECTION

A simple thing like a bolt may not mean much to you, but it means a lot to the Tank.

The bolts used in the manufacture of BLACK, SIVALLS AND BRYSON Tanks are heat treated, and are similar to No. 1020 S.A.E. Bolts (Society of Automobile Engineers) used in the manufacture of high powered motor cars. An ordinary bolt wouldn't do for them —nor will it do for B. S. & B.

These bolts have about 100,000 pounds tensile strength —100,000 pounds to the inch in area. Specially made from bolt wire after a chemical analysis, equipped with a chamfered head and a fillet beneath to assure a good grip in holding the flanges together—TIGHT.

So, as little a thing as a bolt, is a big thing for B. S. & B. This is the smallest unit in B. S. & B. PERFECTION Vapor Pressure Tanks—every part, including the metal itself, is thoroughly tested, and made to specifications. Everything to reach PERFECTION!

B.S.&B. Perfection Vapor Pressure TANKS

These tanks will protect your oil from two losses—actual evaporation caused by the escape of gasoline laden vapors, and loss of gravity due to the escape of the higher fractions of the crude. You are assured of all the oil and at well head gravity.

The tanks work automatically. They stand 16 ounces pressure, or four ounce vacuum with a factor of safety of five. The B. S. & B. Thief Hole Pressure Vacuum Valve is a safeguard which protects the Tank when filling, emptying, (or by expansion and contraction of the vapors under the heat of the sun's rays.)

Let us explain, step by step, how EVERY part of our Tank is tested, and the importance of the other "trifles" that make up the Tank. May we send a man or a plan? Address Dept. A-7.

EFFICIENT B S & B SERVICE DEPENDABLE

Black Sivalls & Bryson INC.

BARTLESVILLE ~ OKLAHOMA

Our Watchword QUICK SERVICE

The OIL WEEKLY. Issued weekly by the Gulf Publishing Co., 3301 Buffalo Drive, Houston, Texas. Subscription price $1.00 per year; 10 cents per copy. Entered as second-class mail matter December 23, 1916, at the post office at Houston, Texas, under act of March 3, 1879.

Smooth Working Wins–

Smoothness in the execution of plays makes the successful football team. Smooth working enables the Gaso Figure 1508 Power Pump to deliver maximum capacity with a minimum consumption of power and with a minimum of wear.

Unusual smoothness of operation in this pump is insured by Timken roller main and pinion bearings, continuous tooth Herringbone gears, and automatic lubrication of all working parts with a bath of clean oil.

Ask for detailed information on Gaso Pumps for any purpose.

GASO PUMP & BURNER MFG. CO.
TULSA, OKLAHOMA
210 Petroleum Bldg., Fort Worth, Texas
535 Fifth Avenue New York, N. Y.

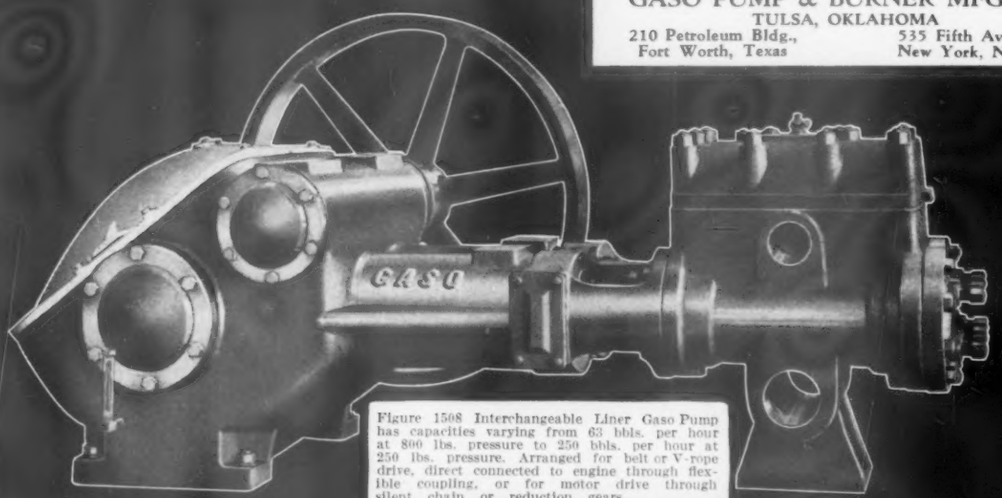

Figure 1508 Interchangeable Liner Gaso Pump has capacities varying from 63 bbls. per hour at 800 lbs. pressure to 250 bbls. per hour at 250 lbs. pressure. Arranged for belt or V-rope drive, direct connected to engine through flexible coupling, or for motor drive through silent chain or reduction gears.

GASO PUMPS

for every oil industry need

"BJ"

Super Safety

SLIP ELEVATOR & WELDLESS LINKS

It is easy to spend lots of dollars for drilling equipment. To some you say "Farewell" and they don't come back. To others you say "Hasta Manana"—which in good Spanish means "Until Tomorrow"—and very soon they return bringing a great number of their friends.

Many of them come back to users of the "BJ" Super Safety Side Door Slip Grip Casing Elevator, as their savings of time on each casing job represent numerous dollars frequently multiplied.

This is the only side door slip elevator made, and has many other exclusively superior features, including the new "BJ" weldless links.

Oil Tool Division of

BYRON JACKSON CO.

Tulsa, Okla. (Warehouse).
214 E. Brady St.

Oklahoma City. (Warehouse)
2603 So. Walker St.

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An experienced lover *could* buy his lady friend cheaper flowers than orchids but he knows that no others are so sure to please, and so certain to be free from regrets.

The experienced oil man feels the same way about his cementing. Although cheaper methods are available, he insists on the HALLIBURTON for the same reason that he insists on a reliable and time-tested insurance company.

HALLIBURTON

OIL WELL CEMENTING COMPANY

DUNCAN, OKLAHOMA

Get the dope ON THESE NEW H.C. SMITH Efficiency TOOLS

They are breaking all previous records for speed and efficiency in drilling, coring and underreaming. They are establishing a new efficiency in oil field operations. Send for descriptive folders and records of performance.

H. C. SMITH MANUFACTURING CO., INC.

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Branch Offices and Warehouses

Bakersfield, California Ventura, California

Cable Address: "Smithco, Whittier"

Oil Well Supply Co., *Exclusive Sales Distributors*, outside of California, for H. C. Smith coring equipment and demountable drilling bits.

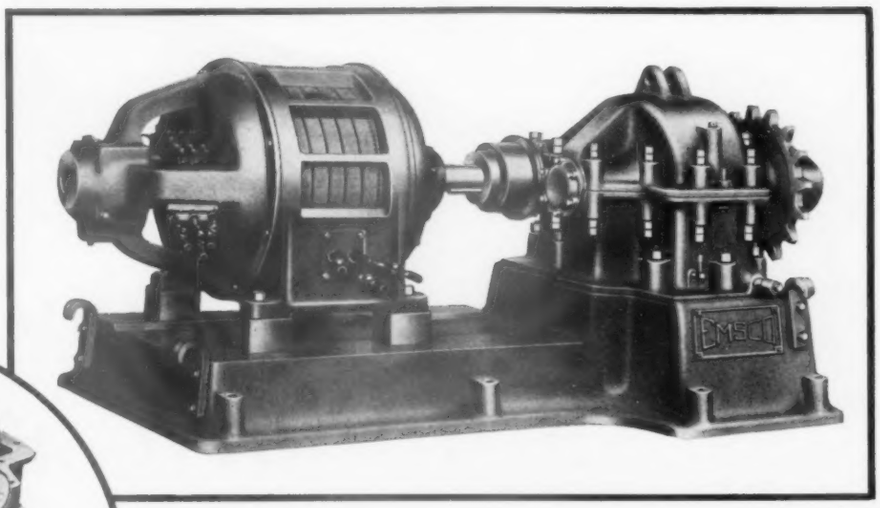
The *New* H. C. Smith Type "C" Drilling Bit with Reamer Body.

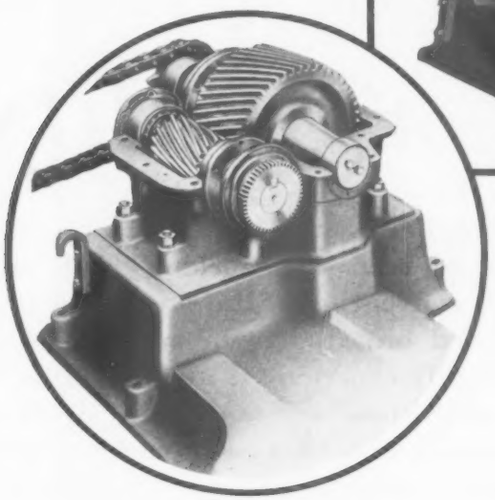
The H. C. Smith Type "CI" Underreamer.

The H. C. Smith Type "C" Coring Outfit.

The *New* H. C. Smith Draw Works Brake Attachment.

The EMSCO *Type* G





ELECTRIC REDUCTION GEAR

200 horsepower

The Emsco Type G Reduction Gear is especially adapted to standard rotary drilling requirements up to 200 H. P. If you have the electric power available, it will pay you to investigate the many advantages of using the Emsco Type G Reduction Gear and electric motor, instead of the ordinary steam engine. The wide face gears, machined from alloy steel forgings, insure great strength and long life. All parts are made oversize to withstand the heaviest drilling shocks and frequent reversing of the motor.

Write for Advance Engineering Folder No. 75.

All Emsco and D+B Products (Except Derricks) Sold Exclusively in Mid-Continent Fields by The Continental Supply Company

EMSCO STEEL EQUIPPED WELLS ARE SAFE

Pipe

with a recognized Standard of Quality

Throughout more than half a century of manufacturing steel and steel products, Bethlehem has established and maintained a high standard of quality that has won wide recognition.

Bethlehem Steel Pipe conforms to this standard. It is made according to modern methods, in mills equipped with the latest, approved machinery, by men with years of successful experience in pipe manufacture. Bethlehem Steel Pipe embodies the same high quality that you recognize in other Bethlehem products.

From the mining of the ore, through the finishing operations, the manufacture of Bethlehem Steel Pipe is controlled by one organization. Each step in the conversion of the steel into pipe is carried out under the supervision of thoroughly experienced men. The tests and inspections are most critical, so as to make certain that each length of pipe shipped conforms in every way to the Bethlehem standard.

When you purchase Bethlehem Steel Pipe, you are assured of pipe of uniform structure, and high quality—pipe made to a recognized standard.

Bethlehem maintains at Los Angeles, Cal., and at Houston, Tex., well-assorted stocks of line pipe, ready for immediate shipment. Both threaded and coupled and plain-end pipe are included in these stocks.

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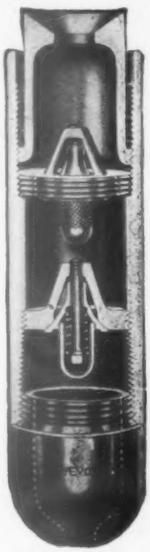
BETHLEHEM STEEL PIPE

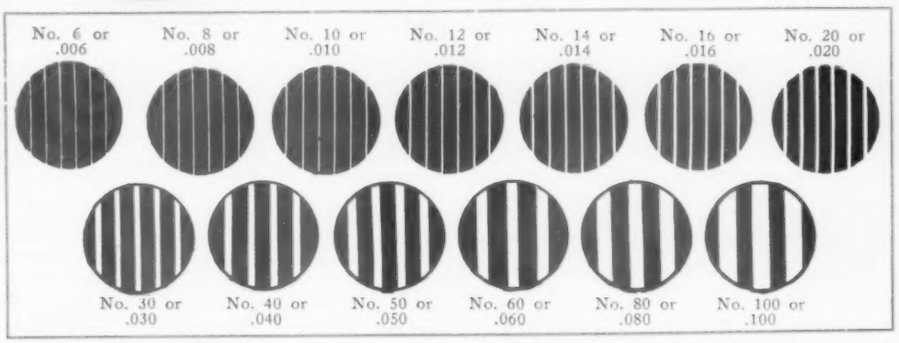
THE WORLD-WIDE PREFERENCE
For
McEVOY STRAINERS

Is the Result of 28 Years of McEvoy Practical and Engineering Experience Fighting Oil Field Grief.



(Patented) Set Shoe Assembly

Write for Catalog



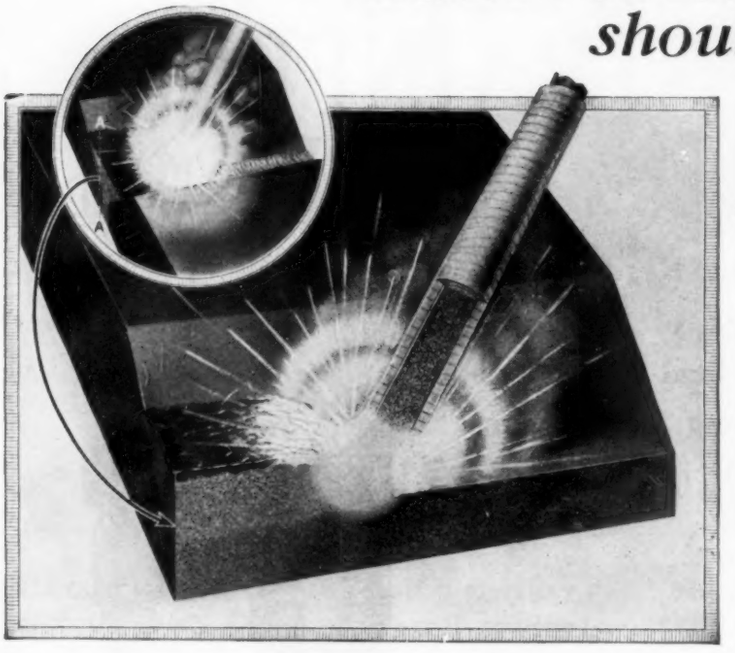
J. H. McEVOY & COMPANY

HOUSTON, TEXAS, U.S.A.

Pacific Coast Branch: McEVOY SCREEN PIPE CO., 2428 E. 56 St., Los Angeles, Calif.

Safety, Dependability, Economy

—*Basic reasons why welding should be done with*



Quasi-Arc

High-efficiency Electrodes

—The electrodes with spirally wound blue asbestos covering.

Quasi-Arc Electrodes have many advantages over the ordinary bare-wire and paste-covered rods. These advantages lead straight to profit and prestige for the user, and are too important for any welder to forego. They give outstanding talking points for your product or your service, besides saving time, labor and money.

Summarized Advantages

—40% greater production.
—Less electric current.
—Less welding material.
—Less liability of welds failing under test or in service.
—Welds with greater resistance to impact torsional and vibrational stresses.
—Less need to rely upon the skill of individual workmen.
—Welds with exceptionally high resistance to corrosion.
—A wider field for welding service.
—A stability of arc that effectually speeds the work.
—Convincing scientific tests to support sales promotion.
—Less danger of weakening the base work through overheating.
—More certainty of perfect welds.
—Electrodes of appropriate diameters for all work.
—Enable you to meet the highest standards of welding specifications.
—Welding accuracy which allow the application of designing and calculating principles to welded constructions.
—An over-all efficiency unattainable by ordinary electrodes.
—Mill scale and rust automatically removed.
—Wholehearted co-operation of a thoroughly trained scientific staff of welder experts.

Supplied in standard 18-inch lengths with cores of varying diameters, and composition suited for the work to be done, as follows:

Mild Steel Electrodes (Colored Blue)—Suitable for general welding of iron or mild steel, structural steel and plate construction, wheel tires, filling steel castings, etc.

Overhead Electrodes (Colored White)—Suitable for any overhead or vertical welding.

Uranium Electrodes (Colored Brown Ends)—Suitable for boiler welding and other work subject to stresses at high temperatures. Such welded joints also show a remarkable high resistance to shock, fatigue and vibratory stresses. Give satisfactory results in joining stainless steel with mild steel, and produced joints of high efficiency in welding high-carbon steel.

Electrodes for Cast Iron (Colored Yellow)—Suitable for the repair of iron castings, leaving a soft machinable deposit.

Carbon Steel Electrodes (Colored Red)—Suitable for reinforcing worn parts of machinery, building up teeth of steel gear wheels, reinforcing steel wobbler ends for rolling mills, trolly rail treads, etc.

Manganese Steel Electrodes (Colored Black Ends)—Suitable for reinforcing or building up manganese steel crusher jaws, dredger bucket lips, trolley crossings, etc.

Vanadium Steel Electrodes (Colored Dark Gray Ends)—Suitable for building up gear wheels, crankshafts, axles, etc., which may require case hardening.

Stainless Steel Electrodes (Colored Blue Ends)—Suitable for welding stainless steel and for reinforcing other steel with stainless steel.

Let us send you full details — better still, let us prove Quasi-Arc advantages right in your own shop on your own work. You set the time and we'll be there.

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Incorporated

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CHICAGO CLEVELAND DALLAS LOS ANGELES

FAST DELIVERY OF YOUNGSTOWN PIPE

Assured by
LARGE MILL STOCKS
Carried in
YOUNGSTOWN, OHIO
INDIANA HARBOR, IND.
(CHICAGO, ILL.)
and
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Field stocks carried at more than 70 points in the oil country.

"If Continental Sells It . . . . There Is No Better"

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224 Traders Building, Calgary, Alberta, Canada

CONTINENTAL

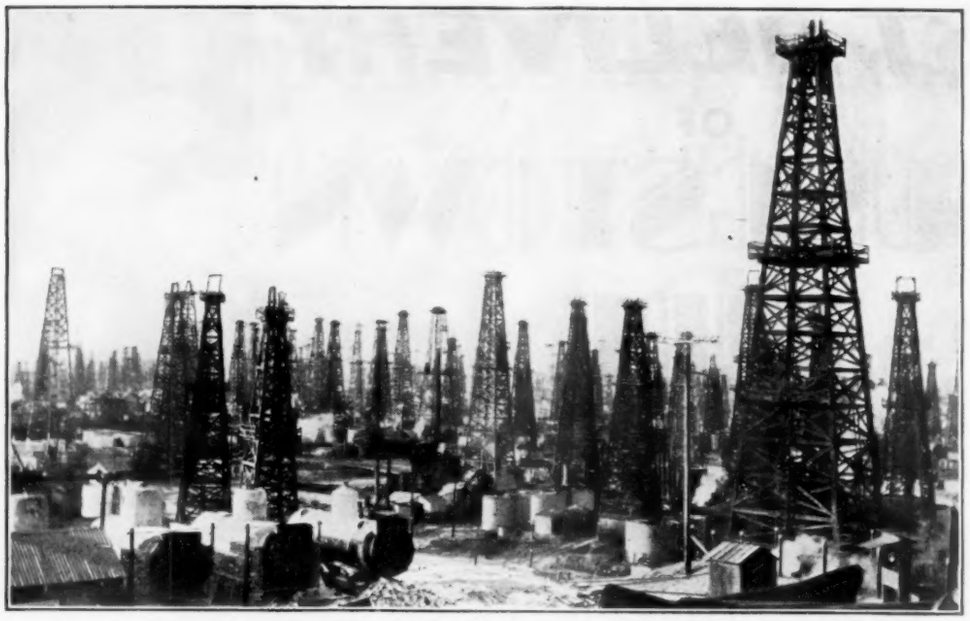


Photo shows Los Angeles basin field in Southern California. Many wells in this field, including the "discovery" well, are equipped with Goodrich Highflex belts

Because of its construction, this belt gives a *longer service life*

IN belts made the traditional way "internal conflict"—a structural weakness within the belt itself—shortens service life and acts as a bar to belting economy. The very construction of the belt sets up opposing forces. The folded edge is a permanent obstacle to complete flexibility—the insides of the belt work against each other. A moment's study of the panel opposite shows why this is.

The Goodrich Highflex belt, on the other hand, is built without folding the canvas. As a result each ply ends at the edge of the belt, and there is no "internal conflict" to prevent the free flexing of ply on ply. All parts of the belt will work in harmony.

That is why the Highflex principle has been hailed by engineers as one of the most important developments in the entire history of belt construction. That is why Highflex belts are piling up astonishing service records under the trying conditions met with in the oil industry. In one oil pumping operation an engineer reports "that Highflex belts give him 10 months against service of 2 to 8 months of previous belts."

Because of their unique construction principle Highflex belts have no seams to open up, and can be used with either side to the pulley. They eliminate bootlegging, are unaffected by temperature changes, and have excess stretch removed during the process of manufacture.

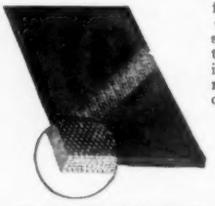
We will gladly send additional information. Write to The B. F. Goodrich Rubber Company, Akron, O. Established 1870 (In the West, Pacific Goodrich Rubber Co., Los Angeles Cal.) or the branch nearest you (see list below).

You Can Prove the Highflex Principle this easy way

Fig. 1

Fig. 2

Bend a pad of paper or booklet with the fingers. When viewed from the edge (fig. 1) it assumes a natural uniform curve because of the unhampered action of the plies. Now, if several layers of paper are folded and then bent (fig. 2), you instantly see how the fold distorts the curve and impedes the free movement of the individual layers.



Oil Field Branches

Pacific Goodrich Rubber Co.:

1386 East 7th St., Los Angeles, Cal.
650 Second St., San Francisco, Cal.
2625 Walnut Street, Denver, Col.

The B. F. Goodrich Rubber Co.:

1201 Young Street, Dallas, Texas
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Goodrich

269 INSULINE

at 5000 ft. in West Texas or 1900 ft. in Kansas

The most modern development in wire line lubrication is 269 INSULINE. All ordinary lubricants for wire lines *lubricate only*, whereas 269 INSULINE, in addition to giving 100% lubrication clear through to the core, also presents an insulating coating that is not affected by any of the troublesome elements such as lime or salt water, sulphur water, gas or any other corrosive agent encountered in drilling.

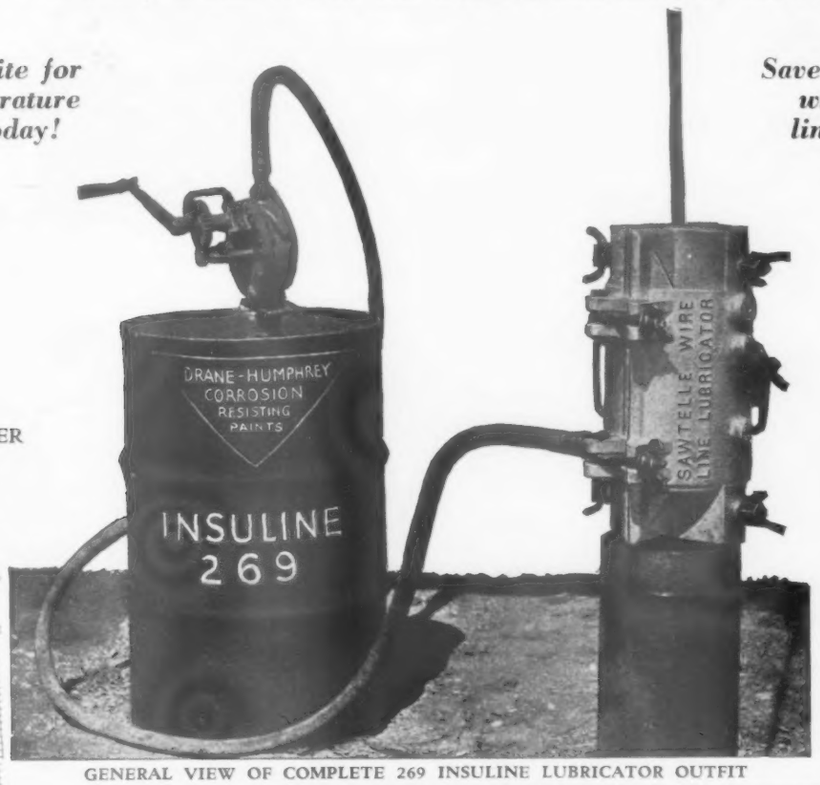
Wherever possible 269 INSULINE should be put on the wire line before it is put into use and then the line should be treated with 269 INSULINE after every sixth tower. Where this method is followed there is a very noticeable absence of one strand breaks, fraying out, fishing jobs, etc.

STOP CORROSION AND REDUCE WIRE LINE EXPENSE

269 INSULINE DOES WHAT NO OTHER LUBRICANT CAN DO

Write for literature today!

Save your wire lines!



GENERAL VIEW OF COMPLETE 269 INSULINE LUBRICATOR OUTFIT

NORVELL-WILDER SUPPLY CO.

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PORTABLE STEEL BUILDINGS

DRANE-HUMPHREY COMPANY INC.

OIL FIELD TANKS

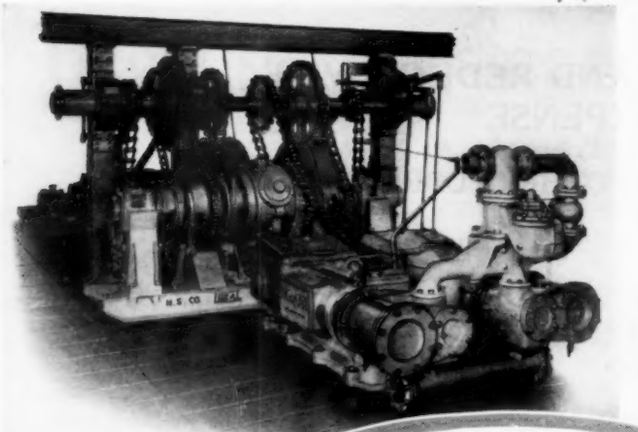
D-H WIRE LINE LUBRICATOR

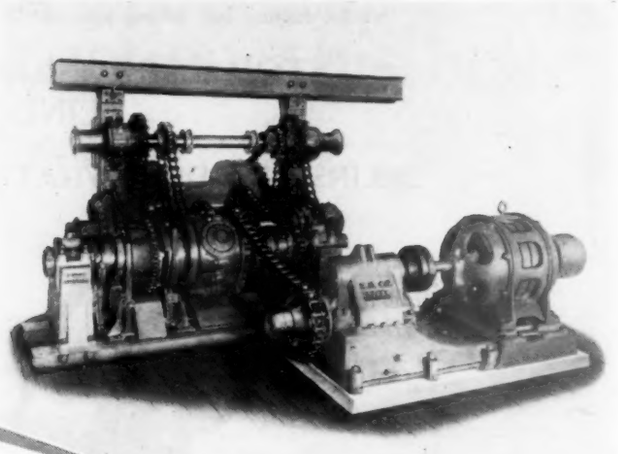
CORROSION RESISTING PAINTS

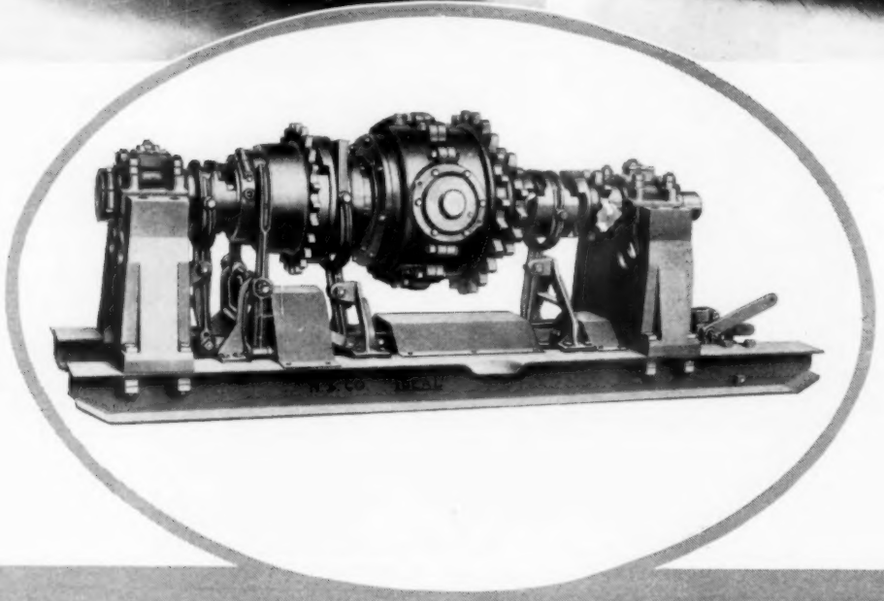
PETROLEUM BLDG. FT. WORTH

SAN ANGELO, TEXAS

IDEAL Halliburton Drilling Control Type "C"







Descriptive Bulletin No. 70 Free on Request

THE
NATIONAL SUPPLY
COMPANIES

METRIC METERS

CLAIMING attention, in the field of measuring, are several new features which have been ushered into existence by the unceasing and persistent research of Metric Metal Works engineers . . . . The latest achievements still further increase the efficiency, extend the usefulness, and increase the service life of both Ironcase and Westcott Orifice Meters . . . . They originate at the source from which have come many of the great developments in the science of measurement . . . . They can be accepted without question as important, dependable, practical contributions to the further advancement and refinement in Meter construction . . . . Descriptions of these developments will be gladly sent to all who are interested in keeping in step with latest meter developments.

SALES SERVICE

Westcott & Greis, Inc., Tulsa, Dallas, Los Angeles

METRIC METAL WORKS

of the American Meter Company, Inc.

ERIE · PENNSYLVANIA · U·S·A

At Work in the Oklahoma City Field

DARLING
FORGED STEEL VALVES
Are a Factor of Safety

Steel—forged under enormous pressure—the only method of steel treatment that can assure the operator that no hidden flaws exist and that the rated test pressure is without qualifications as to what may lie hidden within the steel body.

The Darling Forged Steel Valves shown are operating in the Oklahoma City Field. They were tested for 5000 lbs.—a factor of safety against the unforseen—and are Dar-a-loy trimmed. Protect yourself — your men— against the possibility of trouble; for what does the slightly higher initial cost amount to in comparison with the risks you may take. Besides Darling Valve construction spells Longer Life, Fewer Repairs, Ease of Operation, and Minimum Leakage.

The valves at the left are operating on a well which has a 28,000,000 cubic foot volume, and 1540 lbs. rock pressure. The valves at the right are operating on a well with 70,000,000 cubic foot volume and a 1750 lbs. rock pressure.

Write for Darling's No. 16 catalog on Forged Steel Gate Valves. It explains the valve completely and makes ordering easy and quick.

DARLING VALVE & MFG. COMPANY
Williamsport, Pa.

NEW YORK CHICAGO OKLAHOMA CITY HOUSTON

Mid-Continent Distributors:
Frick-Reid Supply Corp. Atlas Supply Co.
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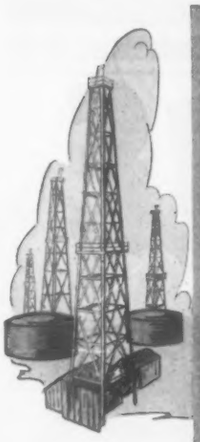
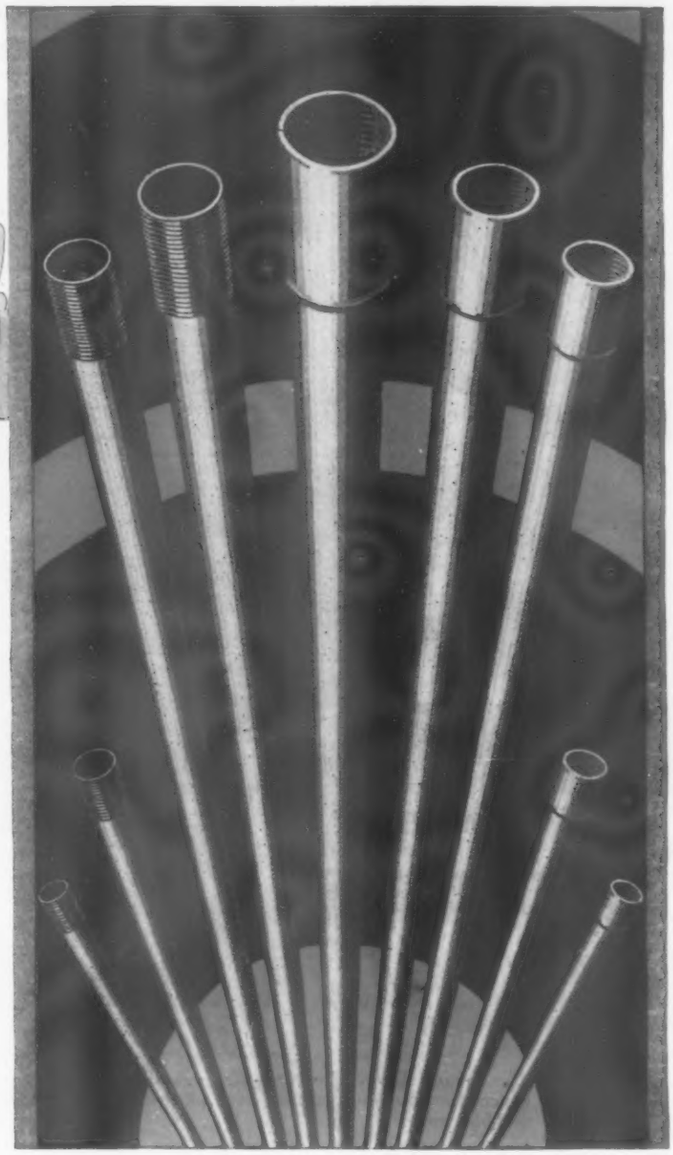
DARLING
GATE VALVES





SPANG
WELDED

CASING
STANDARD PIPE
LARGE O. D. PIPE
LINE PIPE
DRIVE PIPE
DRILL PIPE

Sizes ⅛ inch to 24 inch O. D.

STANDARD
SEAMLESS

CASING
TUBING
DRILL PIPE
(Regular and Heat Treated)
LINE PIPE
STILL TUBES

Sizes 2 inch to 13⅜ inch O. D.

Since 1828

STRONG yet DUCTILE,

No matter what you consider important in pipe, Spang Pipe has it. Take strength, for example. Every length of "Spang" Welded and "Standard" Seamless Pipe is tested to withstand pressures higher than you will ever subject them in service —That means the maximum factor of safety for any emergency.

Another thing, you will like about Spang Pipe is the soft, easy working quality of the special steel —saves time and labor.

SPANG, CHALFANT & CO., INC.

General Offices: **CLARK BUILDING, PITTSBURGH, PA.**

Sales Offices: CHICAGO, ILL. NEW YORK, N. Y. ST. LOUIS, MO. PITTSBURGH, PA. TULSA, OKLA. LOS ANGELES, CAL.
Welded Mills: ETNA, PENNA. SHARPSBURG, PENNA. ***Seamless Mills:*** AMBRIDGE, PENNA.

THE LAYNE

Keystone

WIRE-WRAPPED

MILLED GROOVE OIL WELL SCREEN

Avoids "Sand Cutting"

Enlarged Section showing Keystone Wires passing over Milled Groove holes.

Showing enlarged inlet area known as Milled Groove.

The famous *Layne Keystone wire wrapped Milled Groove Screen,* which prevents *Sand cutting,* is a fully patented invention and cannot be copied!

Leading operators abroad and in this country know the value of screens being wrapped with Keystone wires, and, consequently, are users of the *Greater Production Keystone Wire Wrapped Milled Groove Screen,* oil industry's practical and exclusive invention which increases production from *33-1/3% to 100%.*

From ten to twelve wraps of wire pass over each groove, excessive flow over the drilled holes is avoided as a uniform feed of the fluid through the outer openings of the screen is continually fed through the drilled holes from the entire surface of the screen. This avoids the possibility of *sand cutting,* which is occasioned by excessive velocity of fluid entering at any one point. Drainage distance between the Keystone Wires is very short, eliminating the possibility of openings becoming clogged with mud or sand.

You are assured maximum and most satisfactory performance with *Layne Keystone Wire Wrapped Milled Groove Screen.*

Install now instead of later!

The Layne & Bowler Co.

Houston THE LAYNE **Texas**

Increases Production

The Layne New York Co. 30 Church St., New York
The Layne & Bowler Corp., Los Angeles, Calif.
Vickers, Limited, London, England

A QUARTER CENTURY OF EXPERIENCE AND DEVELOPMENT

SKILLED SUPERVISION GUARANTEES THE QUALITY OF GULF PRODUCTS

COASTAL AND PARAFFINE CRUDES
GASOLINE — LUBRICATING OILS
NAPHTHA — GAS — OILS
WAX — PETROLEUM COKE
CYLINDER—ENGINE—CORDAGE

GULF REFINING COMPANY

General Sales Offices

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District Sales Office

New York Boston Philadelphia Louisville Atlanta Houston New Orleans

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Port Arthur, Texas
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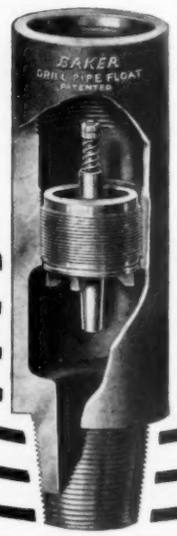

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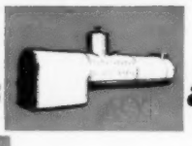
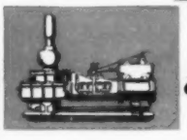
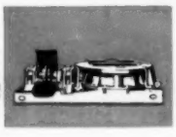
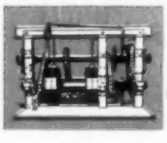
THE Amount of "OILWELL" Equipment used in the oil fields of Venezuela is greater than the combined total of all others. For example... more than 50% of the Boilers  are "OILWELL"... more than 60% of the Pumps  are "OILWELL"... more than 50% of the Rotaries  are "OILWELL"... more than 50% of the Swivels are "OILWELL"... more than 60% of the Hoists  are "OILWELL"... THIS Leadership is the result of a thorough knowledge of oil field requirements... backed by the facilities to produce equipment that provides greater efficiency under all working conditions. THIS Leadership indicates the confidence oil men have in "OILWELL" equipment... no matter where they go to develop new fields.

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Proportion of Formation Gas to Oil

By HARRY PENNINGTON
Engineer, San Antonio

HEREWITH is presented the last of a series of articles written by Harry Pennington on the fundamentals applying to methods for securing low proportions of formation gas to oil—a series which started in 1923.

When this series was started the deductions arrived at by Mr. Pennington were accepted as practical by a few, as visionary by many.

Mr. Pennington was a pioneer in the idea that not only would natural resources be conserved through the elimination of waste but that production of a given area would be improved through the proper application of what he regarded as a natural law of economics—proper proportions of gas to oil.

The six years of time over which these articles have been run at more or less regular intervals have seen a revolution within the ranks of the oil industry. They have seen the development of engineering ideas within the industry advance to the point where this is now an engineering age in so far as petroleum is concerned.

In all of the papers presented, no specific study of any oil field has been included; such phenomena have been selected from 90 fields as would fully illustrate the application of each great natural law applying, that those engaging themselves in the matter of low proportions of gas produced with oil might remain in true fundamental paths.

This series, then, has been the basis for study of any field anywhere, and this article completes the series of announcements of new principles of production.

When Mr. Pennington first began preparing these articles for us, the publishers of THE OIL WEEKLY *felt that the only production route that we could follow to accomplish that which we desired was through the field; we believe that our judgment has been vindicated. Our idea that practical experience should be reinforced with science also has been vindicated.*

In conclusion it is only fair to say of Mr. Pennington, who arrived at conclusions now jointly concurred in by practically all engineers, that he came into the industry as a college trained engineer at a time when such men were rare; and that, although his interest in matters branched into many places and to many different subjects, the question of oil and gas proportions has always been one that has occupied his best thought.

R. L. DUDLEY, *Publisher.*

THIS paper, bearing on the utilization of formation gas and its energy in producing oil, to the end of higher total recoveries and lower recovery costs, is the last of the writer's series commenced in 1923 with the announcement of the discovery of these new principles bearing on the production of oil.

The purpose of this last paper is to show that formation conditions and flow line conditions are two quite distinct matters that are not to be commingled when asserting control over the amount of gas produced with oil, but that the gas in the oil sand, found with the oil is to be considered separately in all its details, and flow lines separately in all their details. Then, directed control over the energy of formation gas for driving oil laterally to the well bore, and then driving oil to the surface, requires division into two phases—that of the gas under pressure with oil in the sand as an *initial* phase, and that of the gas under pressure with oil in the flow line as a *secondary* phase—for making the distinction quite necessarily a prerequisite to the highest formation gas duty, and therefore the lowest gas proportions to the end of securing the highest percentage of total recovery of oil with the lowest recovery costs. We cannot fit formation conditions to a flow line, so, we must fit the flow line to formation conditions, and to do so, intimate, extended study of formation conditions initially, and as production progresses is necessary.

Initial Phases

It might be clearer if we start with the origin of gas and follow it through to the time we produce oil with it. Formed in a subsurface stratum, gas is set in migration by its buoyancy in the waters of porous formations, travelling laterally and upward to where we find it trapped with oil under a cover, or structure. The same waters that last served to accumulate the formed gas, now serve to place the gas under pressure, and as oil and gas arrive under cover, they displace water.

Whether the gas or the oil arrived first, or whether they arrived coincidentally, before the oil and gas bearing formation is penetrated by the drill, the gas in the oil sand is in equilibrium as to the saturation of oil with gas, and as to free gas. That is, even if additional oil and additional gas are still arriving under the same cover, equilibrium as to saturation is set up upon arrival of gas and its placement permanently, until produced with oil.

If more than sufficient gas has arrived to have completely saturated the oil with dissolved gas at the pressure and temperature existing, then the surplus gas over that required for satura-

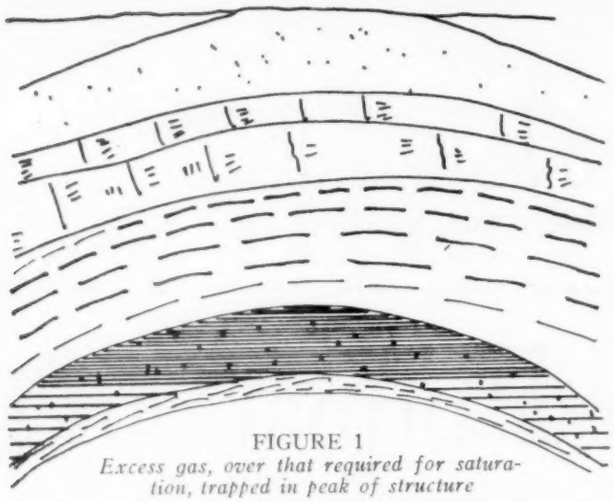


FIGURE 1
Excess gas, over that required for saturation, trapped in peak of structure

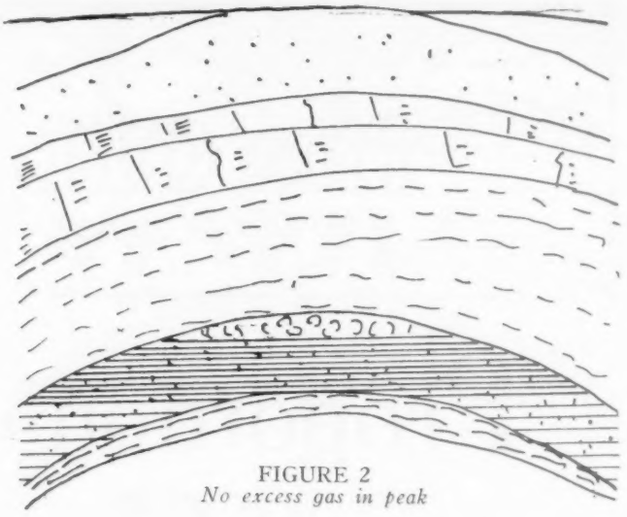


FIGURE 2
No excess gas in peak

tion will be found to have migrated to the peak of structure and there is held in situ, as shown in Figure No. 1, which is again taken from Dr. Day's Handbook, page 43, as a general delineation of a current subsurface condition of this kind.

But, where there is insufficient upper fractions of gas to completely saturate the oil with dissolved gas at the pressure and temperature existing, then *all* of the gas is in solution, and no free gas will initially be found anywhere, although the gas produced with oil has been generally thought of as having been free gas. This condition is shown in Figure No. 2, which is the same structural condition of Figure No. 1, but with no free gas trapped in the peak of the structure.

It can be readily imagined that such gas fraction as propane might have existed initially as free gas, but that, as layer after layer of earth formation was added, and as earth movement continued, the additional hydrostatic pressure set up by increasing depth could easily liquefy propane when the pressure became sufficient.

These two conditions are frequently found; even two sands of the same field may show the two conditions under which formation gas may exist with oil.

From the physical constants of gas fractions, showing the critical pressures and temperatures, and the pressures required for liquefaction at ordinary earth temperatures, we know that the temperatures currently found in oil sands are so high, compared with the critical temperatures of the upper gas fractions, that these fractions cannot at any time have been liquid, but were originally, and are now found, in solution.

For example, the following, taken from Westcott's work, illustrates:

	At atmospheric pressure, temperature necessary to liquefy, F.	Pressure necessary to liquefy at 59°F.	Pressure necessary to liquefy at 122°F.
Methane CH_4	—265	note	note
Ethane C_2H_6	—135	475 lbs.	note
Propane C_3H_8	— 49	104.5	240
Butane C_4H_{10}	34	33	55
Pentane C_5H_{12}	97	6.5	23

Note:

	Critical temperature	Critical pressure
Methane	85.4°C.	825 lb. sq. inch
Ethane	35 °C.	678 lb. sq. inch

For example, the gas, methane, cannot be liquefied by any pressure however high, at a temperature higher than its critical, and, since the formation temperature anywhere has never been found as low as the critical temperature, methane is never found liquefied, but is always in solution with oil. Ethane, also, is never found liquefied, but propane may be liquid-oil itself—if the pressure is higher than 240 pounds at 122° F. At any pressure below 240 pounds, and at 122°F., propane is gas, and it may be all or in part in solution; and at any temperature above 122°F., at 240 pounds, propane is not liquefied gas, but is free gas, dissolved in oil, and held in solution with the oil due to pressure and temperature. And so on, down the scale—each gas fraction behaving as if there were no other gas present insofar as liquefaction and solubility, evaporation and evolution are concerned.

Oils with high percentage of butane and propane, in the same, without higher percentages of the upper fractions, usually show no free gas initially, for, with the lower fractions liquefied into oil, and not in solution as gas, there is an insufficient quantity, generally, of non-liquefiable gas for complete saturation, leaving no surplus of upper fractions as free gas in the formation.

This difference is emphasized in different oil fields; Powell and Mexia oil, for instance, with their high initial boiling point, contain no appreciable content of gas fractions liquefiable at ordinary temperatures. The Gulf Coast upper formations contained no appreciable lower liquefiable gas fractions, although the gas now being produced from deep wells now has sufficient liquefiable fractions to justify the construction of a natural gasoline plant. The fields of Wichita County, and of the Seminole area, and of several California districts, show larger quantities of liquefiable lower gas fractions, and in one case, the quantity of natural gasoline per thousand cubic feet ranges up to over 20 gallons.

And, at any stage of field development, and production, these physical constants of gas are needed for exact calculation of what successively occurs in an oil sand.

A study of these generalities, to ascertain sand conditions, begins necessarily with the first well of a sand; then the second well is a matter of study, followed by the third, and, after a time, there are so many wells that the whole number are to be studied as a group, in addition to each well, as affecting the proportion of gas produced with the oil, and also as affecting areas yet to be drilled.

It is an easy matter to quite accurately measure the static head—the formation pressure—of a well at completion—just at that time, but when flowing, it is not so easy to do. Such initial measurements are valuable in determining the rate of propagation of pressure reduction, and from that, gas evolved in the formation.

Although we cannot see an oil sand, we know by observation of effect that when a well begins to flow, things begin to happen down in the oil sand.

In the first place, liquid will flow only when a difference is set up in pressure; to set up a movement of oil laterally through an oil sand to a well bore pressure at the bore must be lowered, setting up a difference in pressure, in the form of a pressure gradient; the reduction of pressure is greatest at the well, and a gradient of pressure is established from the well radially, extending rapidly at first, then more slowly. The distance away from the well to which the pressure gradient extends is the influence circle of the well. Each well thus sets up its gradient, and its influence circle, and when the influence circles overlap, the wells interfere with one another, mak-

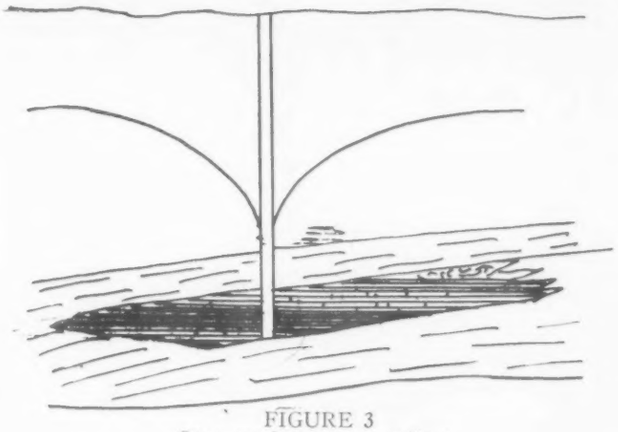


FIGURE 3
Open sand pressure gradient

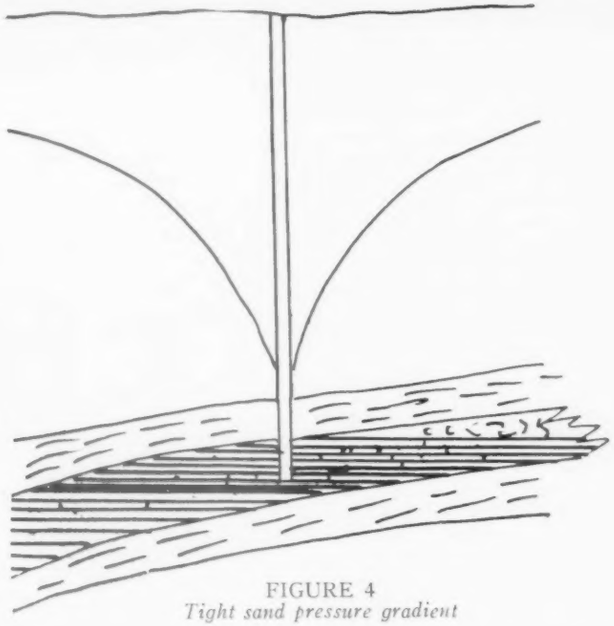


FIGURE 4
Tight sand pressure gradient

ing control over the same a matter of group consideration, as well as individual well consideration.

The influence circle in an open, porous sand may extend further and more quickly with the same differential in pressure than where the sand is tight. The gradient of an open sand—Burkburnett—is shown in Figure 3, and the gradient of a tight sand—Breckenridge—is shown in Figure 4, these having been obtained by direct measurement of the writer. It will be noted that the open sand gradient is flatter than that of the tight sand. Insofar as gas proportions are concerned, the tight sand, releasing gas more slowly, is an advantage over the open sand, although the open sand has other advantages that outweigh.

When the first well is opened up for flow, the equilibrium above set out, attained perhaps through centuries, is immediately disturbed. To flow oil laterally through the sand, a difference in pressure must be set up toward the well, and the rate of flow laterally is a matter of pressure differential, together with sand porosity and oil viscosity.

While high pressures will set up a greater differential than low, still, high differentials in pressure are not necessarily an accompaniment of high pressures, when wells are operated with back pressure, either at the bottom or at the top of the flow line.

Immediately the well begins to flow, it establishes its reduction in pressure in a circle surrounding the well That is where the oil bearing formation is regular and even in texture. The circle of influence then gradually widens in diameter, and, if this were the only well in the field, its influence would gradually spread to the outer limit of the field.

But since many wells are drilled, there is interference between wells. A distant well, outside of the first influence circle, sets up its own circle, and as the two circles widen, they interfere. And following, the indiscriminate drilling of wells sets up the most variable below ground conditions that, for the most part, cannot individually be as closely followed in their later effects.

Then, it is the first wells that furnish the most desired data.

The amount of pressure reduction required to set up migration of oil to a well bore, in an amount equal to well capacity, is not necessarily high. Fifty pounds of pressure reduction will cause voluminous flow into the bore of a properly finished well in a thick, porous sand. In most cases, the reduction of pressure is greater, but the object of this paper is to show that pressure reduction should be as low as possible—as low as will secure the lowest proportion of gas when the well is flowing at capacity.

Now, remembering that gas is held in solution in oil solely by pressure, if the pressure is lowered, the dissolved gas boils out of solution, or evolves, in an amount almost directly proportional to pressure reduction, on the order of carbonic acid gas evolving from a bottle of soda water.

Since Figures 3 and 4 show the location of greatest pressure reduction to be at the well bore in the sand, evolution of gas is maximum at this point. Then, radiating from the well, along the pressure gradient, the evolution of gas proceeds in a direct proportion to pressure reduction, until, when the out-

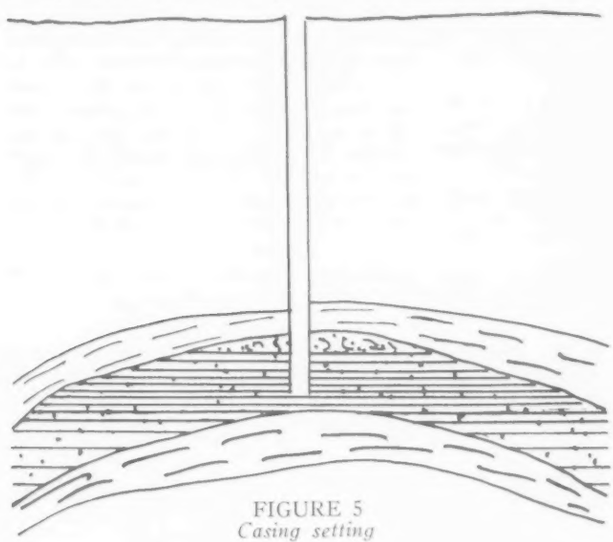


FIGURE 5
Casing setting

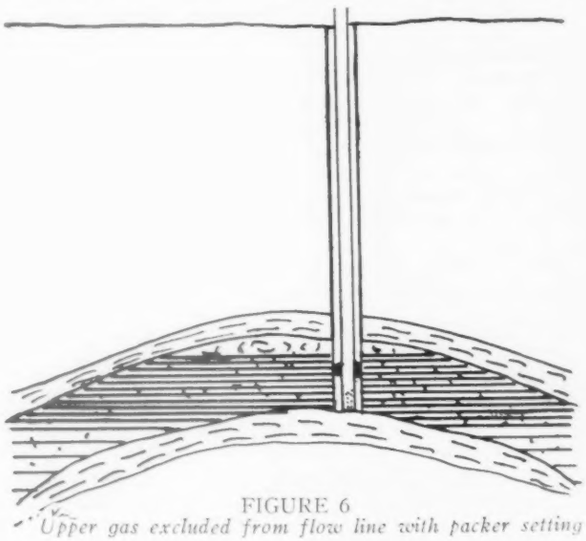


FIGURE 6
Upper gas excluded from flow line with packer setting

ermost influence is reached, no gas at all is evolved, for there is no reduction in pressure. Then, all of the oil within the influence circle evolves gas when the well is opened to flow.

Naturally, free gas migrates to the peak of structure, accumulating there, as we find it, with other gas already accumulated. The gas evolved within the influence circle, if further down in the series, may substitute the dissolved gas in oil encountered en route, under Raoult's law, and the gas evolved at the well may not reach the peak, but instead, the gas of substitution arrives at the peak.

Gas bubbles being buoyant, naturally do not migrate downward, but climb immediately to the peak, as indicated by the proportion of gas in peak wells, compared with flank wells.

A well drilled on the flank of structure produces no free, dry gas, but wells on the peak may blow dry gas, before going into the production of oil, although blowing off dry gas to get at the oil is evidently wasteful of the natural energy resources of the sand.

Three Types of Wells

Thus, the writer has set out above, the material differences in the characteristics as to gas of peak wells and flank wells. There is a further difference in flank wells—those at the lowest point of production on the structure and those intermediate of the low point, and the high. Then, there are three distinct types of wells on any kind of structure:

Peak wells.

Intermediate flank wells.

Wells lowermost on the flank.

Each type of well requires individual treatment to the end of maximum recovery of oil during the natural flow period through the utilization of gas and its energy.

For example, Figure 5 indicates a condition found in many cases. This may be taken either as an anticlinal, or a quaquaversal dome, with the free gas trapped in the peak of structure, as

(Continued on page 76)

Roumanian Hand-Dug Wells Reach Depths Around 650 Feet

By H. E. CASSIDY

ROUMANIA has the unique distinction of having developed to the greatest degree the technique of hand drilling or digging of oil wells. Wells have been sunk to a depth of over 650 feet, or several times the depth reached by the first machine-drilled well in America, the famous Drake 1 at Titusville, Pennsylvania.

Hand wells in Roumania are of two shapes, cylindrical and square. The first type is generally found in the north, where the strata pressure is slight and the rocks are many and hard to penetrate. A basketlike network of branches supports the side wall.

As a rule it was possible for one man only to work at the bottom of the hole. Two were needed when the well was having its "casing job" of wooden frame work or when water sands were encountered but they were usually forced to stand on each other's feet. When one considers that the square type of well ran between three to five feet on a side and gradually diminished to two and one-half feet as the hole became deeper, it is easy to understand the difficulty of using a large crew.

Picks were used for the majority of digging or occasionally dynamite, ignited by fuse if no gas was found in the well or electrically when gas was present. A "driller" seldom remained below more than three hours and if large quantities of water, oil or gas were encountered, this diminished to as little as one-half an hour.

The amount of hole made per day varied greatly, depending, as might be expected, upon the depth, hardness of the formation, weather and many other conditions. Normal progress was from three to five feet per day.

The majority of wells were left at nightfall with a small hole in the bottom filled with water. In this manner the walls were kept moist and there was consequently less chance of cave-in. In addition, this water made the task of excavation easier, by bailing the water and earth into small wooden buckets, which were raised to the surface by means of a windlass.

After 1870 a complicated wooden contraption of gears, ratchets and cogs was constructed for use in soft formations. Here, where the work of drilling made rapid progress, this apparatus raised the dirt to the surface by means of a horse-operated drum windlass.

When water sands were encountered, drillers were much more upset than in the present day and age. Then the sides began to cave in at the point of digging. Two things were necessary of accomplishment. First, the casing of the sides with a strong enough basket support. Second, the exhaustion of the water by a clay or straw shut-off.

Until the diggers were down below 100 feet no artificial ventilation was used. Beyond that depth a primitive apparatus was constructed for ventilation purposes. A wooden pipe was stuffed with branches in such a way that they acted as multiple fans. This pipe was then lowered into the hole and moved backward and forward rapidly so that the sluggish, foul air was stirred up. Later a box-and-fan arrangement were used for drawing off the bottom air, while in the southern provinces bellows were utilized.

The impossibility of using candles or lamps for illuminating purposes is obvious. Sufficient light was gained for workers digging below the point where daylight penetrated by the use of triangular mirrors, mounted at the mouth of the well and angled in such a way as to reflect into it.

The driller utilized three methods of ascent or descent. At shallow depths he rode in the barrel used to raise the cuttings. At greater depths he rode in special safety drums and in wells where there was great danger from gas, water or cave-ins, safety drums were utilized. Where these conditions existed, the workers remained tied to a rope, ready to be hastily dragged from the hole at the first sign of danger.

As soon as oil was struck all of the "drilling apparatus" at the top of the well was removed. A special windlass was then rigged up for bailing with 20-gallon barrels. A tripod was constructed over the well with a crude wooden pulley in the center. A rope was passed through the pulley, one end attached to the bucket, the other to the motive power, usually a sleepy old horse. The barrel was raised when the horse was led away from the well and lowered when he backed up to it. In addition to the barrels, there were cylindrical shaped goatskins, which were much lighter. The bailing line was attached to eyelets, upon which the goatskin was laced. This method, which has existed practically to the present period, requires two men, one to lead the horse, the other to empty the bailer.

The cost of drilling a well to 650 feet seldom totaled over $3500 and could be accomplished in about two years.

One of the old time practices relating to hand-dug wells in Roumania was the sum agreed upon per productive well for peasant labor. These amounts varied from $100 to $125 per well. Standard practice in Moreni was to demand a fixed royalty of 10 per cent in cash with the current quotation on the crude extracted as the determining price factor.

Concrete fire wall 20 feet high with 12 foot base. To the right, partial view of tank farm on terminal; to left, two wharves for tying up tankers

Rio Grande Terminal Auguments Pacific Coast Shipping Facilities

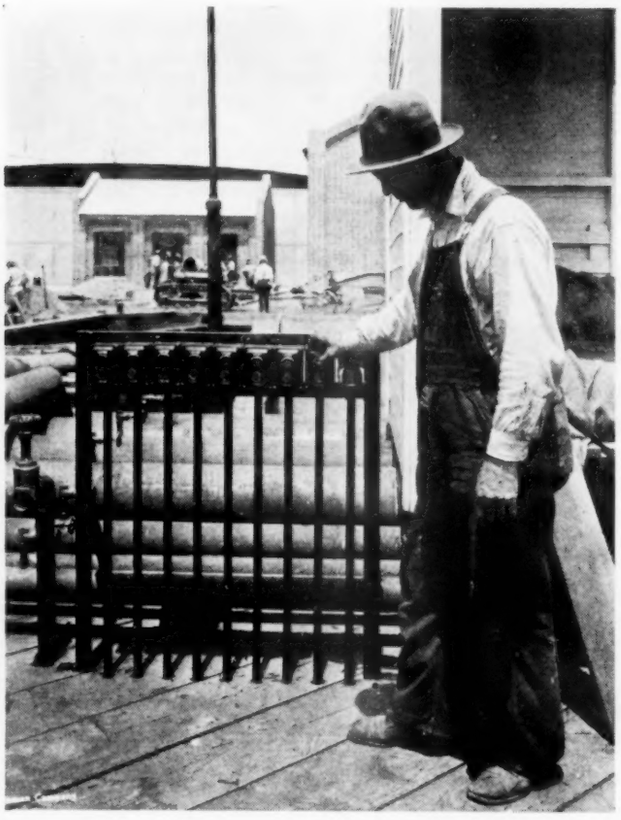
THE first tanker unloaded recently at a most modern oil loading terminal, located at Los Angeles Harbor. This $2,000,000 terminal, the property of the Rio Grande Oil Company, broke ground practically four months before the day of its completion, and in oil handling facilities, fire prevention, accessibility, and economical operation represents one of the most progressive steps in this branch of the oil industry.

Some conception of the efficiency with which this plant has been laid out may be gained from the fact that a gigantic tanker can tie up in 10 or 15 minutes and be loaded and unloaded with the aid of of only two terminal men in a few hours. The cargo is pumped to or from the boat's compartments by these two men who have but to make the proper connections, press a series of electric switches and gauge the flow.

This terminal is now one of the strategic oil shipping points for Southern California. The harbors of San Pedro and Long Beach form part of a long crescent facing south into the Pacific. The Rio Grande terminal lies a few hundred yards east of the technical dividing line for the two harbors, at a point where Channel No. 2 of the Long Beach harbor touches the mainland. A railroad siding runs alongside the terminal. The terminal can be reached by boats in two ways, either through San Pedro harbor or through the open waterway lying beyond Long Beach. A large turning basin several hundred yards from shore provides convenient space for the handling of tankers.

The site for the Rio Grande terminal lies about 22 miles directly south of its refinery at Vinvale, California, just east of the town of Downey. When the ground was purchased for the terminal four months ago, it was part of a huge drab expanse of harbor land. Now 12 large tanks rear above the retaining wall, which surrounds almost the entire 14 acres of the terminal, while along the east side of the wall runs a wide roadway, and running off the roadway are two of the most up-to-date loading docks yet devised, one about 250 feet and the other 150 feet long. It is the plan of the company to landscape the entire property with grass and shrubbery and 3500 feet of paved roadway will be laid down.

As one looks at the terminal from the shore, one sees the big protective wall surrounding the field of 12 tanks. This wall is 20 feet high, 14 inches thick at the bottom and 12 inches thick at the top, with a 12-foot base and supports to reinforce it. Each of the big tanks rests on a ring of concrete, two feet thick and eight feet wide, which in turn rests upon three rings of piles driven 40 feet into the ground. The 12 tanks inside the retaining wall represent a storage capacity of a half a million barrels. The tanks carry the utmost in safety factors and equipment. Tank tops float directly on the surface of the liquid so no space is provided wherein gases may form, while a continuous circle of steel springs at the edge of the floating top prevents the slightest escape of vapors. The largest tanks are 144 feet in diameter and stand 40 feet high. These hold 118,000 barrels each, the next size holds 35,000 barrels. There are three of the giant size, four of the 35,000-barrel size, and in addition, two 3000-barrel tanks and three 1060-barrel capacity containers for lubricating oil and other products. There is room within the



Each one of the five manifolds located on the two wharves are electrically controlled. Electrical buttons instantly start or stop flow through any outlet

wall for two large or four smaller tanks to be erected in the future.

High Voltage Economy

Outside of the wall, at the entrance to the property, is the high pressure pumping system for forcing the petroleum to the Vinvale refinery 22 miles away. High voltage wires run to this plant. Incidentally, the terminal uses very high voltage for all motors, 2300 volts. This is in line with the very latest electrical theory, it being conceded more economical in operation. Over $7000 was saved in the wiring at the terminal through the use of this high voltage system. The power comes in at 20,000 volts and is stepped down. This current actuates in the high pressure pump house four motors, each 250 horsepower, four stage compression, two motors being attached to each of the two pumps. These pumps can take the contents of a tanker, say 60,000 barrels, and force it up the 22 miles to Vinvale in 25 or 30 hours. The fuel oil coming down from the refinery is, of course, pumped from the refinery end, and is heated and stepped up by two booster plants located on the Rio Grande property in Signal Hill. The crude going up is not heated, but the fuel oil coming down is raised to about 150 degrees to insure its flow. By the time it reaches the terminal, it is down to about 80 or 90 degrees.

Three lines connect with the high pressure pump house. One for crude going up, and two for refined products coming down. Of the two intake lines, one runs only from the Signal Hill properties of the Olympic Refining Company, where it enters the pipe line system. From the high pressure pump house lines lead to each of the 12 tanks on the farm. No fuel is entered directly into a tanker but passes through the storage system for gauging.

Low Pressure Pump House

After the fuel is stored in the tanks, it is handled by the low pressure pump house located half way down the terminal against the fire wall. The pumps draw oil and gasoline from the tanks to the tankers or vice versa. The pump house is divided into two sections, one for the heavy oils and the other for the lighter oils and gasoline. There are six pumps in one side for the lighter materials, and two heavy-oil, 14-inch centrifugal pumps in the other, each of which is actuated by a 250-horsepower motor. All eight pumps are separately motorized, but each motor can be switched to any one of the other pumps. The two heavy oil pumps make about 8000 barrels per hour each, and when coupled together move about 22,000 barrels per hour. The two 14-inch gasoline pumps, with their 250-horsepower motors, can singly make 6000 barrels per hour or together about 20,000 barrels. The other pumps are for kerosene, Diesel oil and other smaller products, to refuel tankers or small harbor boats.

All materials are carried through these pump houses, through two manifolds, and through these manifolds or batteries of valves they are switched to any point desired on either of the two wharves.

Efficient Manifolding

After the fuel leaves the pump house manifolds, it goes to the various manifolds or valve exchanges on the wharves. The large wharf has three of these manifolds and the smaller one, two. Each of these manifolds on the wharves represents a series of outlets for the various pipes which lead underground from the pump house. In other words, if a tanker is to be loaded with fuel oil, the oil is pumped from the storage tank to the pump house. Here valves operate to direct it to any one of the five manifolds on the wharves (three on the large wharf and two on the smaller.) After it reaches any of the manifolds on the wharf, it is directed into the hold of the steamer. Two valves are placed at the end of each line where it reaches the manifold. If a tanker has facilities for taking on six lines at one time, the oil can be directed from the pump house through the fuel line to each of the manifolds on the large wharf, and into the oil compartments by six lines, two flexible tubings being attached to each of the oil lines where they reach the wharf manifold. The same system applies to all other products, each of which have separate lines running under the roadway and up to the wharves. One of the terminal crew standing by the valve on the wharf watches the reception of the liquid into the hold. If too much gas begins to form in the compartment, or more than the escape vents can pass off, he presses an electric button and the flow from the pump house is instantly stopped. Each manifold has 15 outlets—two eight-inch outlets for crude, two eight-inch outlets for gasoline and four eight-inch outlets for fuel oil besides seven smaller valves for the lesser products.

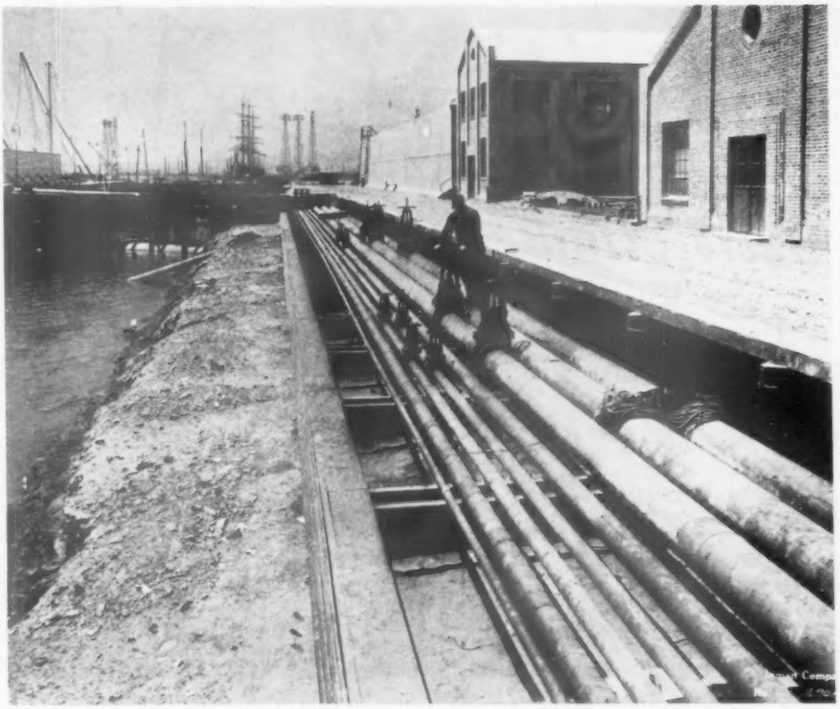
Quick Docking Facilities

Three derrick masts with numerous booms on the large wharf, and two on the smaller, provide quick loading equipment for tanker supplies, and by the aid of electric motors quickly hoist the eight-inch flexible rubber connecting hoses to the valves of the tanker's oil compartments. Automobile trucks may drive up to the edge of the wharves, but cannot traverse them because of government regulations for the prevention of any fire possibility. The channel alongside the wharves is 42 feet deep, sufficient to accommodate the largest steamers. Each wharf connects by telephone with the office which adjoins the pump house.

When a tanker ties up alongside the dock, all fires in her power room must be extinguished, according to government regulations. For this reason a two-inch steamline and an electric line are immediately connected from the wharves to supply the boat with heat and light while she is at dock. When she gets ready to move, steam is pumped directly into her

boilers from the boiler plant adjacent to the pump house and the tanker leaves without a moment's delay.

When a tanker arrives, it must unload oil by its own pumping equipment, another government regulation, and a 90,000-barrel load will take about 18 to 20 hours. The terminal would consume probably about five hours to reload with fuel oil, and could do it more rapidly still with both its 14-inch pumps working at the rate of 22,000 barrels per hour, if the tanker could receive it that fast.



Looking along roadway bordering wharves of terminal. Each one of the pipe lines shown are by-passed to each of the five manifolds used for loading tankers

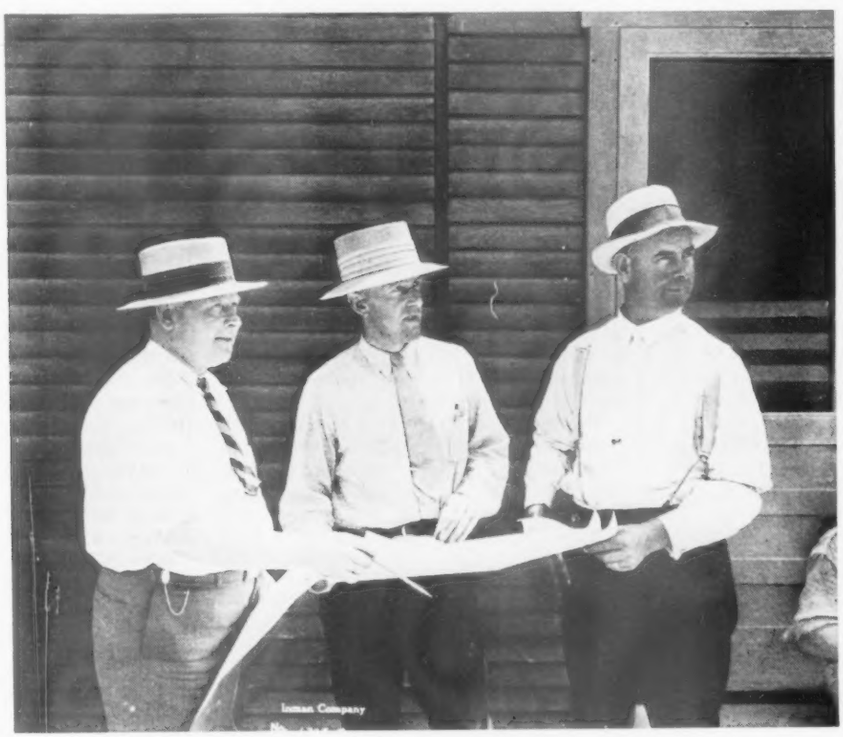
Fire Prevention

Every device and facility for the prevention and suppression of fire in connection with an oil plant is maintained. Under the direct supervision of the fire chief and the fire prevention engineer of Long Beach, who have had much experience in the supervision of oil fire risks, a special fire pump has been installed. Two large motors, one electric, one gasoline, are arranged in tandem. The failure of one automatically throws the other into operation. These pumps can place 2000 gallons of water a minute at 180 pounds pressure at any one or all of the 37 outlets spotted about the terminal. As a matter of fact, the water pressure will probably have to be reduced, as two men cannot handle a hose with that much force. Sea water is pumped in from the harbor for the fire system. At strategic points are located portable Foamite generating units, an apparatus resembling a small powder mill. The Foamite powder is dropped into a hopper after the apparatus is connected to the water hose, and as the water passes through, it mixes with the powder in a chamber below to form foamite.

A fuel loading barge for supplying small harbor craft is connected to the terminal at one end and will distribute fuel oil, gasoline, Diesel engine oil, kerosene and other products. Near the entrance will be a wholesale loading rack. Products from the refinery, such as lubricating oil and other substances not sent by pipe line, will arrive at the railroad siding adjoining the terminal, for storage in the tanks.

While a considerable portion of the traffic will be oil coming from the oil field of the Rio Grande Company at Elwood, near Santa Barbara, where an oil handling terminal is also maintained, a constantly growing traffic with Europe, South America and Asia will move from this terminal, where a total day and night crew of only eight men will soon be sending a stream of tankers from its pier to bring the products to all parts of the world.

The terminal is under the supervision of J. J. Downey, chief engineer for Rio Grande Oil Company, construction by W. C. Farquhar, engineer. Captain M. M. Walk will be marine superintendent in charge.



D. M. Finnick, chief draftsman on terminal; W. C. Farquhar, engineer in charge of construction; Capt. W. W. Walk, marine superintendent

Creosoted Timbers *for Marine Construction* Prove Economy

Experience with docks teaches creosoted pine best material for piles or drilling locations in southern waters

IN giving proper consideration to the particular material best suited for construction purposes in marine waters as regards economy and effectiveness, creosoted timbers and piles deserve preferred attention; this because the use of creosoted materials allows marine construction to be undertaken at a reasonable initial cost with the assurance of a longevity commensurate within reasonable requirements. Past usage of piles and timbers properly impregnated with creosote oil (dead oil of coal-tar), gives definite information as regards the life which can be expected from such material in marine waters where Teredo and other wood-boring organisms are active.

With the purpose of bringing out several essential basic facts relative to the general subject of creosoted timber and piles in marine construction work this article is dedicated in the hope that it may aid in solving many of those problems.

Creosote Oil, What It Is

American Wood Preservers Association and American Railway Engineering Association specifications for Grade 1 creosote oil are as follows:

1. The oil shall be a distillate of coal-tar or coke oven tar[1]. It shall comply with the following requirements:
2. It shall not contain more than three per cent of water.
3. It shall not contain more than 0.5 per cent of matter insoluble in benzol.
4. The specific gravity of the oil at 38° C. compared with water at 15.5° C. shall be not less than 1.03.
5. The distillate based on water-free oil shall be within the following limits:
   Up to 210°C. not more than 5 per cent.
   Up to 235° C. not more than 25 per cent.
6. The residue above 355° C., if it exceeds 35 per cent, shall have a float test of not more than 80 seconds at 70° C.
7. The oil shall yield not more than 10 per cent coke residue.
8. The foregoing tests shall be made in accordance with the standard methods of the American Wood Preservers' Association.

A. Fraction distilling between 210° and 235° C., is usually solid or contains some solids when cooled to 25° C.

B. All the fractions up to 315° C., contain tar acids in varying amounts, usually at least one per cent, calculated on the amount of the fraction tested.

C. The specific gravity of the fractions 235° and 315° C. is usually not lower than 1.085 at 38° C., compared with water at 150.5° C. However, some pure coal-tar distillates fall slightly below these limits.

Experience has shown that cases of adulteration of creosote oil have occurred; hence, it is not enough to specify creosote oil without at the same time indicating the composition of the oil to be used. If the oil does not comply with at least one of the foregoing tests it is undoubtedly not a pure coal-tar creosote oil.

Toxicity.—The effect of the creosote oil as used in marine construction materials depends on its toxicity. Webster defines toxicity as: Quality, State, or Degree of Being Toxic, or Poisonous; Poisonousness.

Timber for Treatment

Timber or piles to be treated must be sound wood, free from infection of any kind; free from defects of such nature as would detract from its usefulness, and in the case of piles, straight enough to facilitate driving. It should be remembered in this connection, that wood decay like human disease, is contagious and infectious.

For marine construction work where protection is desired against borers and other organisms, it is desirable to obtain a maximum penetration of creosote in the timber or piles; hence, a species of timber is desired which has a comparatively large proportion of sapwood.

Sapwood is the outer light colored portion of a tree trunk, through which the water passes from the roots to the leaves and in which excess food is stored temporarily.

Heartwood is the central core of the trunk. In most woods the heartwood can be distinguished from the sapwood by its darker color.

The heartwood of oak, pine, and other structural timbers is not intrinsically stronger than sapwood as has often been supposed, but the strength of all timber is in direct proportion to its density.

Sapwood as a rule takes preservative treatment better than heartwood. It seasons faster but when green usually contains a larger percentage of moisture which often makes it heavier. Timber should be carefully inspected in the woods and before and after treating to avoid possible defects.

For the above reasons southern yellow pine—both long-leaf and short-leaf—is particularly adaptable to creosoting, as both classes have a sufficient proportion of sapwood to insure a maximum penetration of creosote, which is the goal being striven for; namely, a protecting encasement of wood, thoroughly impregnated with creosote oil, as a barrier between the marine waters and the central core or untreated portion of the wood.

Methods by Which Timber and Piling Are Creosoted

The processes by which timbers and piles are most generally impregnated with creosote are known as the empty-cell and full-cell processes.

The material is loaded on trams or cars, and run into a large cylinder, equipped with large air-tight doors, which are closed tightly and either of the following processes used.

Reuping (Empty-Cell)

(a) Treating cylinder containing the timbers or piles is filled with compressed air and so held for an hour or more.

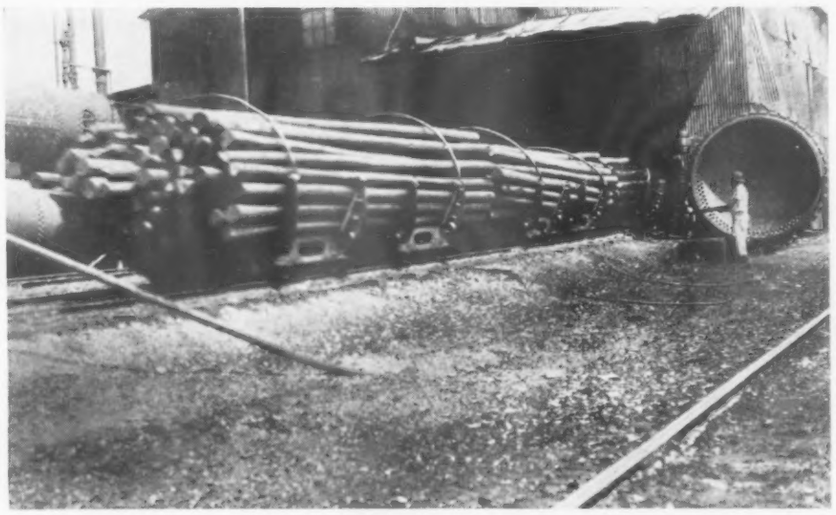
(b) Treating cylinder filled with oil, allowing air to escape but without reducing pressure.

(c) When treating cylinder is full of oil, pressure is increased to a maximum of 150 pounds to 250 pounds per square inch, and held until specified absorption is obtained.

(d) Oil is drained and vacuum drawn to remove excess of oil from wood. The air imprisoned during (a) expands during (d), forcing out a certain amount of oil with it and the process is therefore called an empty-cell process.

If green timber is treated it is first artificially seasoned by steaming, boil-

[1]Owing to the complexity of the chemical composition and physical properties of coal-tar creosote oil, and to the fact that some of the same compounds and properties which characterize coal-tar creosote are found in certain petroleum derivatives, the determination of the purity of creosote oil is difficult. When there is not certain assurance that the oil is a pure product, the following tests will aid in arriving at an opinion as to its coal-tar origin.



Tram load of Piles Entering Treating Clyinder

ing, or boiling under vacuum before the pressure is applied.

Net final retention by this process is approximately one-half of the original injection.

Bethel (Full-Cell)

(a) Timbers or piles are subjected to a preliminary vacuum one half to one or more hours.

(b) Oil is injected under pressure, maximum usually between 100 pounds and 275 pounds per square inch.

(c) Final vacuum sometimes omitted.

(d) Green timber is usually subjected to a live steam bath at about 20 pounds pressure for several hours before the preliminary vacuum. Seasoned timber is not usually steamed. The amount of oil injected depends upon the specifications of the purchaser, but the absorption per cubic foot is generally within the following range:

Lumber, Poles, Structural Timbers, Cross Arms, Ties, Fresh Water and Land Piles—6 to 12 pounds.

Marine Piles and Timbers—20 to 24 pounds.

For piles and timbers for use in marine construction work, the full-cell Bethel process is productive of the best results, as it allows a maximum penetration and final retention of 20 to 24 pounds of creosote. Before the timbers or piles are run into the cylinder, they are measured and the cubic content computed. As the pressure is applied the gauges show how much oil is forced into the fibres of the wood, and by simple computation the amount per cubic foot can be figured. In the final vacuum all but the amount as specified may be withdrawn from the fibres. In the empty-cell process, usually twice the desired content is injected and the excess later withdrawn.

Often the term "treated to refusal" is used in specifications. This is indeed a misnomer, as a careful perusal of the mechanics of the above processes will show. It is apparent to even a novice that such a definition is entirely dependent on the class of the treating equipment used. If the equipment is new, tight, and powerful, "refusal" means one thing; whereas, if the equipment is old, leaky, and just able to "get by", then "refusal" means something else. Hence, it is advisable to specify a certain retention of creosote oil per cubic foot.

Material is inspected after treating; samples of the oil used are analyzed by a competent chemist, and borings are taken of each charge and from these the average penetration of the creosote oil into the timber is computed. These data are all filed and available to the purchaser, should he desire this information regarding the material he is buying.

As can be easily noted in checking the specifications which are shown later, a maximum penetration is desired for material which is to be subject to attack by marine borers, such as Teredo, Limnoria, Bankia, etc. It is not enough merely to specify the kind of preservative, but you must be certain that you have enough of the preservative in the timber and that it penetrates deeply enough.

Construction Experience in Marine Waters

The section of the San Francisco Bay area forming the northeastern portion of the bay contained many large and valuable structures, practically all of which had been constructed on untreated wooden piles during the 40 years preceding 1920.

While the San Francisco Bay proper had since 1849 been known to be infested by marine borers, none of them had been known in the northeastern section, through which the waters of the San Joaquin and Sacramento Rivers were discharged. In 1914 it was found that a species of shipworm previously unknown in, or at least unrecorded from, these waters had attacked the dikes at the entrance to the Mare Island Navy Yard, and in 1917 signs of serious damage appeared in the dikes. Within the next four years practically every timber structure in San Pablo Bay and Carquinez Straits was destroyed, and those in Suisun Bay were attacked.

The San Francisco Bay Marine Piling Committee was formed to devise protective measures. A considerable amount of research work was done by this committee and the National Research Committee was requested to organize this study on a nation-wide scale. This was done and these two committees in cooperation with the American Wood Preservers Association have from time to time issued reports of this research work.*

Louisiana Gulf Coast

During the latter part of 1928 The Texas Company entered into an agree-

The Texas Company's Lake Barrie well, Terrebonne Bay, Louisiana, showing use of piling

*Marine Borers on the Pacific Coast. Report of San Francisco Bay Piling Committee, (1927.) (Marine Strustures. Their Deterioration and Preservation. Natural Research Council Report, 1924).

ment with the Louisiana Land and Exploration Company, to test a number of salt domes located mostly in Gulf waters, bordering on the coast of Southern Louisiana. In carrying on this work it was necessary to build a substructure in open water, which would support drilling derrick, boilers, water tanks, fuel tanks, mud tanks and other equipment necessary to oil development work. As the outcome of these tests was problematical The Texas Company used untreated cypress piles in this work, realizing that this material was only for temporary structures and planning to place creosoted pine piles under all permanent structures later erected. A number of untreated cypress pile derrick foundations have been built by The Texas Company in its operations in Terrebonne Bay and other waters bordering on Terrebonne Parish, Louisiana, also in Vermillion Bay and Calcasieu Lake. The Texas Company had occasion to remove these piles from time to time and has found that the Teredo is exceedingly active in these waters. A case is cited of one untreated cypress pile in Terrebonne Bay, approximately six months, which showed one-fourth of its surface area eaten by Teredo at the mean low tide line. This resulted in this structure being even unsafe as a support for oil well pumping equipment, let alone heavy drilling equipment.

Picture of Untreated Southern Yellow Pine Pile Pulled from Derrick Foundation, Ambrosio Field, Near Maracaibo, Venezuela, After Life of Approximately Two Years. Attack Was Entirely by Teredo

Venezuela

In Lake Maracaibo, Venezuela, various kinds of untreated woods were tried as piling, including such native woods as Gateado, Vera, Curarire, Roble Colorado, and Bolsa, but it was found that the Teredo attacked all of the above.

Well seasoned southern yellow pine piles, treated with 20 to 24 pounds of Grade 1 creosote oil has been used with satisfaction by the majority of operators in the teredo infested waters of Lake Maracaibo.

In building spur dikes in the Magdalena River in Colombia, untreated native piles were completely destroyed in three to four months, or before the dikes could be completed. Creosoted pine, 16 pounds empty-cell treatment, was resorted to and proved entirely satisfactory.

Use of Concrete Piling

Concrete piling has also been tried as derrick foundation supports in oil development work in the Maracaibo Basin, but it was found exceedingly costly and it is understood that the company using concrete is contemplating a return to creosoted material on account of excessive cost.

In some waters where cracks occur in the concrete and salt water gains access to the reinforcing, corrosion has set in which appreciably weakens the entire structure. In addition to this, corrosion trouble, concrete structures in marine waters are also subject to attack by marine borers. The report of the San Francisco Bay Piling Committee contains considerable data on this subject which is of interest. The report notes an instance in Los Angeles Harbor where concrete jacketed piles in four different locations were examined, and 50 per cent were more or less attacked by concrete marine borers, while about 20 per cent were very considerably bored by this marine life.

Treated Timbers and Piles

Numerous cases are known where the statement has been made that creosoted piles have not lived up to the claims made for them in marine waters. Where the truth has been run down in such cases, it has been found that the timbers or piles used had not been properly treated, or had been abused either in handling improperly, or in leaving avenues open to attack by marine borers, resulting in failures which cannot truthfully be said to prove that properly creosoted piles and timber will not stand up under similar conditions.

Many cases are known where the engineers in charge have made up specifications which were entirely inadequate for the problem at hand. Thus they had specified an eight or 12-pound treatment, where a 20- or 24-pound treatment should have been demanded.

In several cases failures have followed use of creosoted piling where adequate specifications by engineers were nullified by purchasing agents' too often repeated habit of buying on price and price alone, regardless of quality or past reputation of the party being dealt with.

One case in California is referred to in Wood Preserving News, April, 1929. An amusement pier costing around $18,000 failed dismally because the company failed to give proper specifications and provide adequate inspection. In this particular instance, a mixture of petroleum and cresylic acid was substituted for creosote. The owners eventually were awarded damages against the contracting parties furnishing the material.

An article entitled "The Penalty for Careless Handling of Creosoted Piling in Waters Infested by Marine Borers" was published in June, 1924, issue of Wood Preserving News. This article by H. B. Truett, Field Engineer, Associated Oil Company of California, emphasizes the necessity for proper handling of treated material in wharf construction. The wharves referred to are both of creosoted piles, one at Monterey, California, and one at Gaviota, California, and after being in service 17 and 26 years, respectively, were found to be in an unsound condition due to attack of marine borers. On inspection it was found that in many cases careless driving has caused the piles to split to a point above the mud line, allowing the borers access to untreated timber, also apparently bolt holes for bracing were bored after the piling was driven, and no protection given these bored holes. This is a very common error in marine construction work. Such holes as must be bored after treatment should be gone over and the piling or timber protected against the entry of the marine borers through these bolt-holes.

The Use of Properly Treated Materials

For a considerable number of years the impregnation of timber with creosote has been recognized as one of the most effective protections which can be had against marine borers.

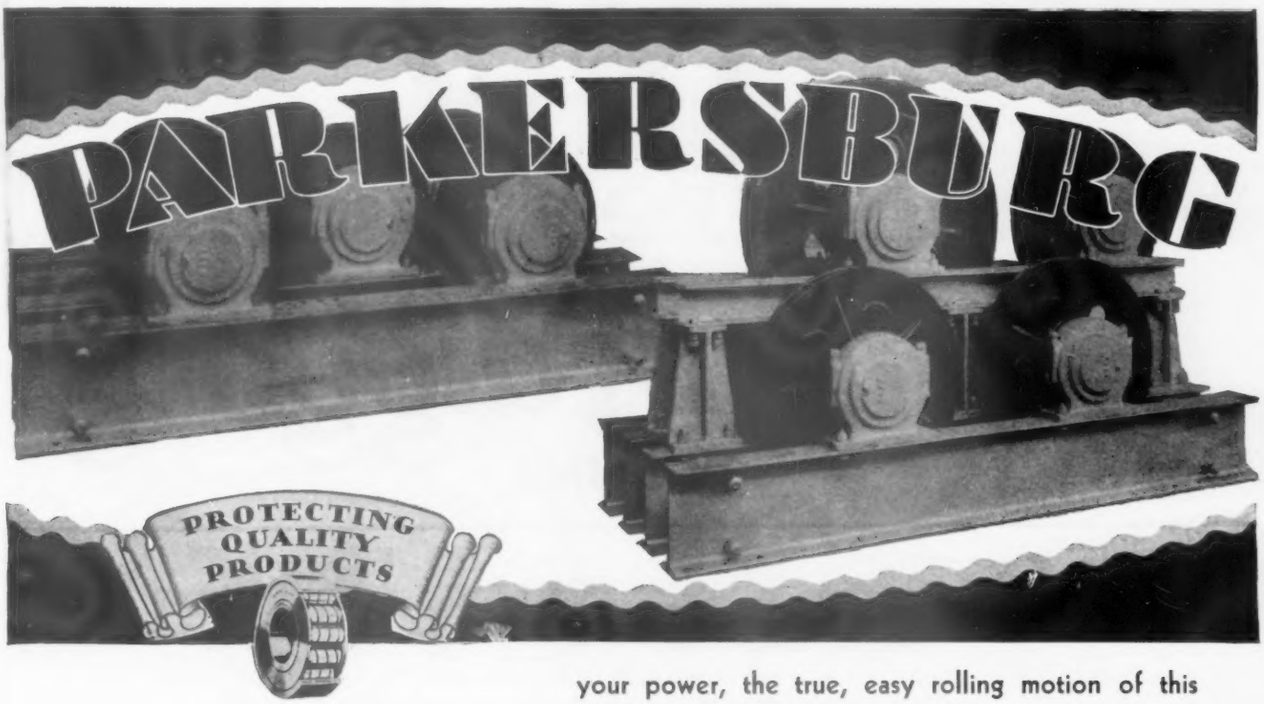
The following are some examples of satisfactory life of creosoted piles and

(Continued on page 104)

Another Quality Product Hyatt Equipped

ANNOUNCING their new crown blocks, The Parkersburg Rig & Reel Company says: "In the Parkersburg Roller-Bearing Crown Block you get the combined efforts of this corporation, who for thirty-two years have been designing and building oil field equipment, together with that of Hyatt Roller Bearing Company, who pioneered the oil field with anti-friction bearings."

Further, they state: "Sink them faster than the other fellow, and you make greater profits. Without taxing your power, the true, easy rolling motion of this Roller Bearing Block, equipped with Hyatt rollers, speeds up drilling."



The single deck rotary type block and the double deck cable tool block, illustrated, are manufactured by The Parkersburg Rig and Reel Company, Parkersburg, West Virginia. Both are completely Hyatt equipped.

There isn't much for us to add . . . for the same sentiments are expressed by the many other builders of Hyattized equipment, and borne out by the unfaltering performance of Hyattized units in the hands of the user.

On your next order for any kind of oil field mechanical equipment specify "Hyatt equipped" and enjoy the freedom from bearing care which Hyatts so amply provide.

HYATT ROLLER BEARING COMPANY

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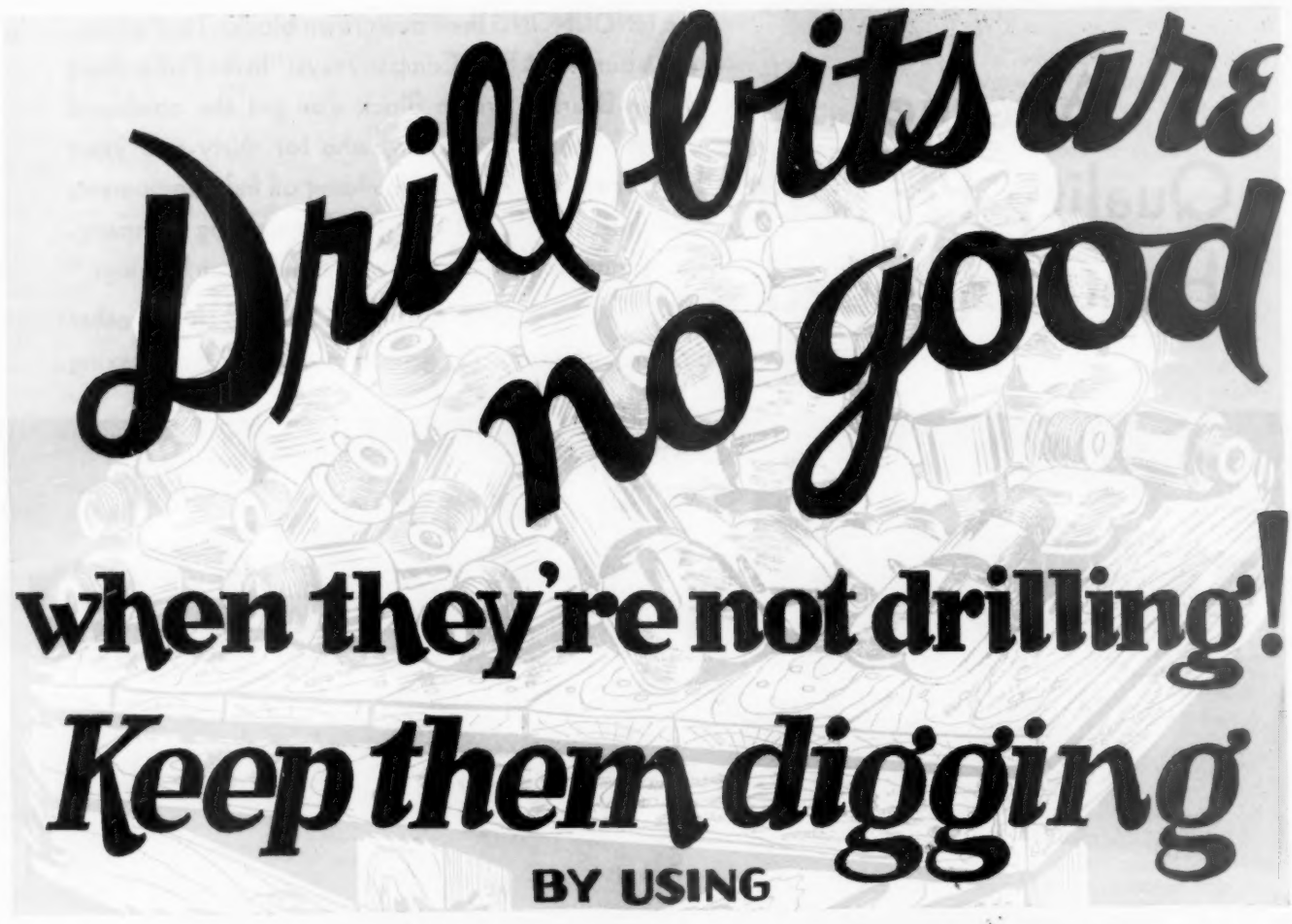
HYATT

ROLLER BEARINGS

PRODUCT OF GENERAL MOTORS

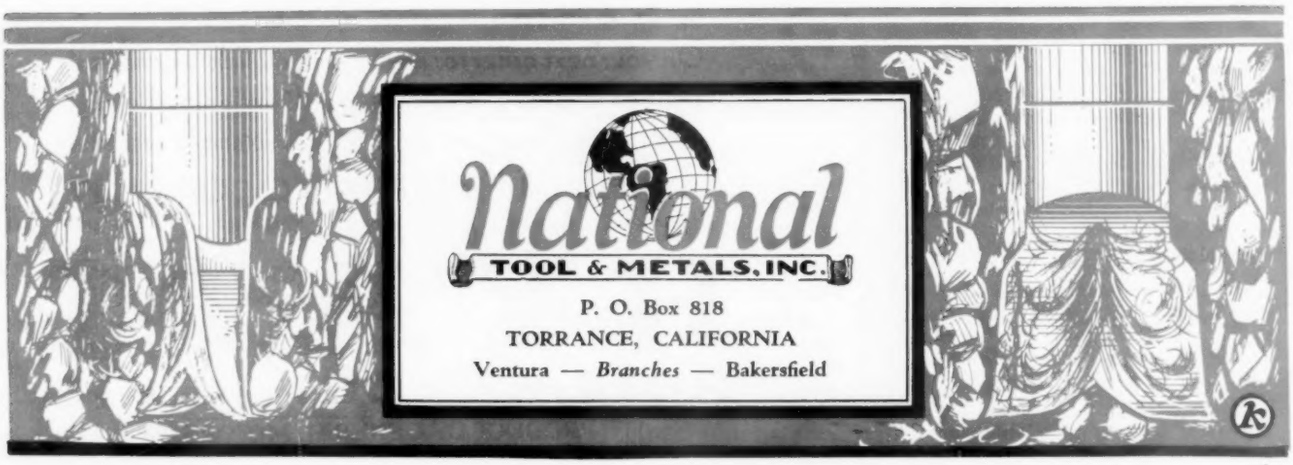


DRILLITE

The Metallic Diamond-Sub PASTE

Drill bits on top of the hole are no good! . . . If you use *Drillite* on them they stay on the bottom because they are digging. . . . *Drillite* requires no jigs, demands only one coat, offers greater *speed of application* than any other known diamond-sub, and is the FIRST diamond-sub to WITHSTAND IMPACT! . . . Specify it for *either* rotary or cable tool bits.

Ask for Catalogue No. 29-A for detailed information.



California Prices Restored When Production Declines

Santa Fe Springs output reduced approximately 46 per cent uniformly; Long Beach brought down sharply

By BRAD MILLS
Staff Representative

LOS ANGELES.—The crisis in California has apparently passed, and following the restoration of former posted prices in the Santa Fe Springs, Long Beach and Seal Beach fields the industry is facing the future with more assurance that the supply will not exceed actual demands, plus the positive knowledge that as long as production is held to a reasonable level a fair posted price will be maintained.

Working in a swift and orderly manner, production at Santa Fe Springs was reduced from 270,000 barrels to 150,000 barrels within 10 days, while at Long Beach the total was brought down from 170,000 barrels to an even 100,000 barrels within an even shorter period. Never before has a townlot or intensely developed area in California been able to show such startling results. Every barrel was shut in by voluntary cooperation and the new gas conservation act actually played little or no part in the reduction.

There was no doubt but that the industry in California was faced with disaster when the posted price of crude in the Santa Fe Springs, Long Beach, Seal Beach and Ventura fields was slashed by more than 50 per cent. The price cut alone did not precipitate the impending crash, but rather the long period of overproduction should be blamed. A price reduction was not only justified but appeared to be the only means of breaking the morale of operators who insisted on producing much more oil than an overburdened market could withstand. Every means had been exhausted to bring the supply at least to the consumption level, but because a group of operators refused to join in a common curtailment plan, major operators also continued to produce at the maximum rate, due to the necessity of offsetting leases in townlot and closely developed districts which constitute the state's critical field.

Price Cut Stronger Than Law

Restoration of former prices in the three Los Angeles basin fields means an average increase of about 75 cents per barrel at Santa Fe Springs, and around 60 cents per barrel at Long Beach and Seal Beach. Present prices at Santa Fe Springs range from 89 cents for 21 gravity crude to $1.65 cents for the 39 gravity product. At Long Beach and Seal Beach proper the restored prices range from 70 cents for the lowest grades to $1.35 cents for 32 gravity crude, with an average price of about $1.17 cents. In all fields the average increase was more than 100 per cent. In posting the former prices, which were effective at 7 a. m. November 8, Standard Oil Company waived the 10-day agreement and immediately started paying the increased price. The price cuts made about three weeks ago were effective 10 days after the announcement, so it is evident that operators sold oil at the reduced prices for only a few days. Other purchasing companies immediately followed the Standard Oil Company's lead.

Without the sweeping price reductions, production would never have been reduced so radically in either the Santa Fe Springs or Long Beach field. Many operators were determined to produce at a maximum rate as long as they could sell their crude at a good price or could partially convert the oil into gasoline and wholesale this commodity on a market which was artificially and superficially held by the major companies who were interested in maintaining some semblance of order within the industry. Immediately after the price cuts, operators saw that their only salvation lay in some sort of curtailment move which would remedy some of the existing evils.

Major operators who had been "carrying" the retail and wholesale markets to the benefit of the smaller operators who had rebelled at the thought of strict curtailment, threatened to pull the props from under the whole market structure and precipitate probably what would have been a disastrous price war. When such a condition was apparent, cooperation was forthcoming from all concerned and a new chapter was written in the accomplishments of the petroleum industry in California.

Standard Responds to Curtailment

Concentrating on Santa Fe Springs, leading independent operators took the matter in hand and started the movement which resulted in a restoration of former prices within 10 days. The appointment of Paul Grimm as umpire, with orders to treat every operator fairly and exactly alike, was the signal to shut in 125,000 barrels with the least possible delay. Within two days fully half of the total necessary amount was shut in and within a week total field production exceeded the allowable amount by only 10,000 barrels. Through strict cooperation the total figure was reduced to 148,000 barrels, plus new well production which could not be included in the basic total. A statement from the umpire brought a prompt reply from Standard Oil Company in the form of a return to former prices.

A survey shows that the necessary reduction was made at Santa Fe Springs by pinching in wells and by shutting in many producers which could not be harmed by the action. It required only a few days for operators to arrive at the proper size flow beans to yield the exact amount allowed. This upsets the theory advanced during previous efforts at conservation, when it was claimed by some that it would require several weeks to arrive at the proper level. Some of the operators were within a few barrels of their allowable production at the end of two days.

The average reduction at Santa Fe Springs was about 46 per cent. Each operator, regardless of his potential production, made the same scale reduction, or horizontal cut. This was the only basis on which all operators would have agreed and proved equitable in every quarter. The day before the price was restored production by zones showed the O'Connell leading with 60,000 barrels, followed by the Clarke with 55,000 barrels, the Buckbee with 10,000 barrels, the Nordstrum with 8000 barrels and all shallow zones with 15,000 barrels. To this amount should be added about 10,000 barrels which fell under new well production. Each zone also suffered about the same percentage of reduction. Many of the shallow zone wells were shut in.

Long Beach Cuts, Too

The work of bringing production down at Long Beach was little short of phenomenal. Immediately after the appointment of Neil Anderson as umpire, production took a nose dive toward the 100,000-barrel level. At the mass meeting, it was stated that there were about 150 operators in this intensely developed townlot field, but after the actual work was launched it was found that 217 operators had to sign the curtailment agreement. This aggravated the work considerably, but about 15 operators volunteered to contact these operators. Every means of travel was used to obtain the necessary signatures. Where opposition was met, an explanation of the advantages of lower production and higher prices for crude never once failed to convince the most skeptical. It was shown that 50 barrels of oil at $1.25 per barrel was worth more on the surface than 100 barrels at 60 cents per barrel. In addition, the volunteer

workmen proved without argument that the operator would have the remaining 50 barrels in the ground to be produced in the future at the higher price. Results were astonishing, and within a week the 100,000-barrel level was reached. Standard Oil Company of California simultaneously advanced Long Beach crude prices with those at Santa Fe Springs, although the increase was not expected until a few days later.

The reduction was made at Long Beach by pinching in wells and shutting down producers where the latter could be done without injury. Many of the shallower producers already had been shut down, having been unable to produce profitably at the reduced crude prices. When operators were convinced that the old prices would be restored, they offered little opposition. The Texas Company missed its allowable quantity by only six barrels during the first day. Shell Oil Company shut in 70 wells in an effort to meet requirements. By reducing production around 12,000 barrels, the three operators in the Seal Beach field—Standard Oil Company, Associated Oil Company and Continental Oil Company—met the allowable figure almost overnight and the former price was restored. Little trouble was anticipated in this field.

Other Fields Progressing

Production at Ventura has been reduced 10 per cent., or about one-third of the amount necessary to bring the field total to the correct level. The remaining 20 per cent. will be sliced off of the total as soon as lease requirements are adjusted. Landowners in this field have caused considerable trouble and are difficult to reconcile to the reduction.

Elwood production has been reduced by about 25 per cent., with another five per cent. to fall under the ban. No price adjustment has been made in this field but a cut was threatened when posted prices at Ventura were revised two weeks ago.

California's production has been reduced by more than 200,000 barrels during the past two weeks, with a cut of 30,000 barrels to be made as soon as possible. Only the Ventura field has the lower posted prices left in effect. This is by far the most drastic reduction ever made in California and the first time that much progress has been made in townlot areas. The market is stronger than it has been for more than a year and the turn of 1930 is expected to witness a still greater improvement. Agreements in effect at Santa Fe Springs and Long Beach expire in 90 days, but it is believed that they will be renewed with little effort.

Price Structure Strengthened by Proration in California

By H. J. STRUTH
Staff Economist

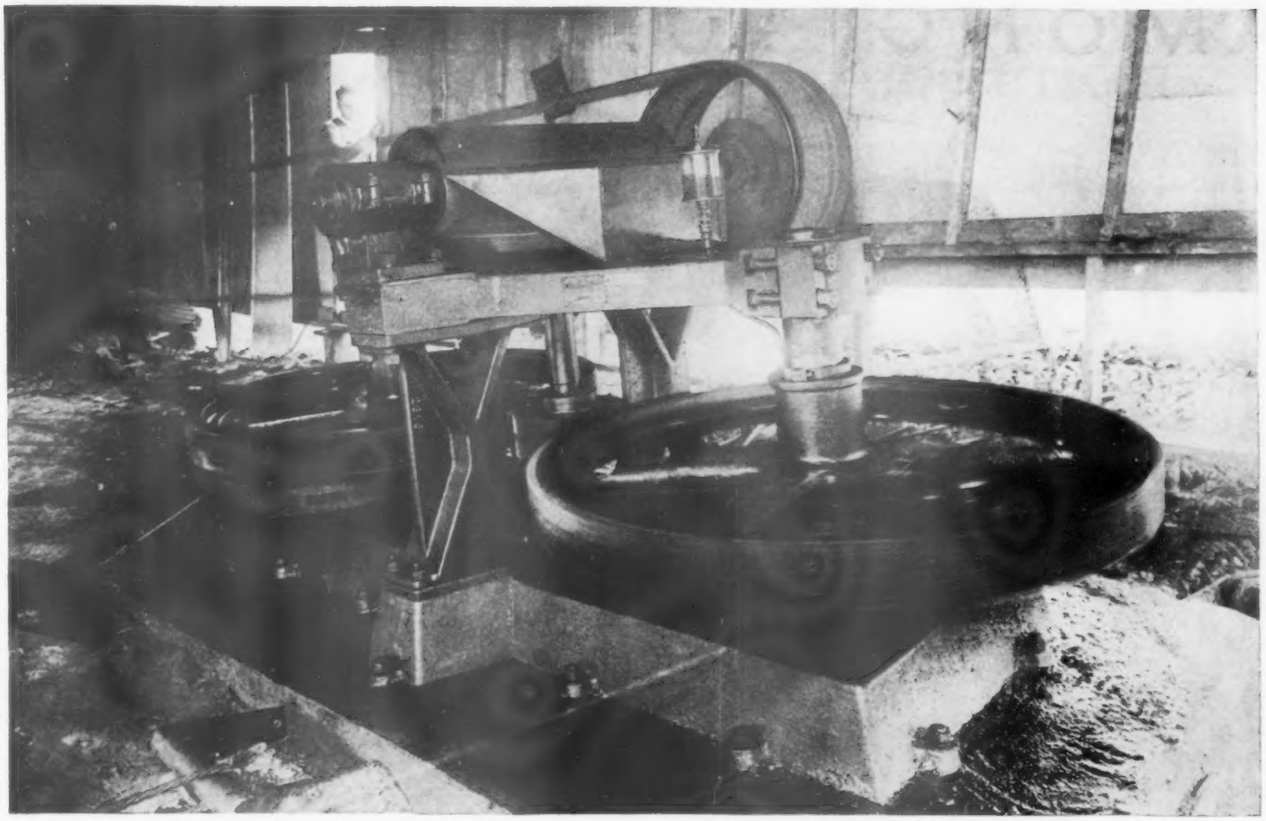
THE skies of the petroleum industry are rapidly clearing and the clouds that threatened precipitous declines in market values of both crude and refined oils have almost entirely vanished. Within less than two weeks, California has demonstrated the feasibility of balancing crude supply with current demand, thereby strengthening the market structure of the entire industry. Two weeks ago there was considerable doubt over the immediate outlook, which was dependent entirely upon the ability of California operators to successfully combat the rising tide of over-production. Today the industry is rejoicing over the results attained in California, which has brought about a better state of equilibrium than ever before, and bids fair to furnish the incentive to continued control of America's oil supply with resultant prosperity for the industry.

No more forceful example of the sound workings of the economic laws of supply and demand could be cited than the drastic reduction which accompanied continued over-production of crude oil in California. At the same time, the infallibility of the economic laws within the petroleum industry was again demonstrated on November 8, when prices of California crude were restored to their former levels, as a result of overwhelming success in reducing production to current requirements. A precedent has been established by this acceleration of a complete cycle, paving the way to a new era in the industry that will eliminate all doubt concerning the effectiveness of the economic laws. It has proven that results can be obtained with surprising rapidity when the incentive to offset a loss with a reasonable profit is placed before the operators of a given oil producing area. Prices of California crude have been restored, but this was done with the understanding that present agreements would be carried out to the letter. Undoubtedly, operators in California realize that continued observance of curtailment measures are necessary to the future welfare of the industry. If there are no violations of the 90-day agreement, it is a foregone conclusion that the industry will have attained complete balance between supply and demand by the time spring requirements become manifested in a large demand.

A casual check-up of the oil situation at this time, reveals that excess production of crude oil in the United States is only slightly above 100,000 barrels, as compared with more than 400,000 barrels a few months ago. California has reduced its excess to a negligible quantity, while Oklahoma and Kansas have chalked up a deficit of more than 50,000 barrels daily. Texas remains as the only conspicuous excessive producer of crude, with a daily excess of more than 125,000 barrels. With California's over-production problem apparently solved, and Oklahoma continuing its efforts to control the supply of crude, attention will be focussed more and more upon a number of areas in Texas that are responsible for excessive production. Undoubtedly, steps will be taken to extend proration efforts to these Texas fields within the near future, insuring nation-wide balance between supply and demand. Unit operation is being tried in the new Van Zandt area, the benefits of which may soon extend to other flush pools. With Texas in line with California and Oklahoma, there is little doubt but that the industry can expect a better and more prosperous year throughout 1930.

Conditions within the industry have undergone a revolutionary change that may forever banish the uneconomic practices of the past. For the first time in its history, the industry appears to be in complete accord concerning the conservation of crude oil. What has been accomplished in California and in Oklahoma and Kansas would have been considered impossible a few years ago. The mere fact that the industry has actually accomplished the effort to control the supply of crude from flush areas demonstrates that a more co-ordinated industry has resulted from continued talk and effort to gain concerted action upon this most important matter. With the clearing of the atmosphere dawns a new era for the industry that cannot fail to result in stabilized, profitable prosperity during the coming years of continually greater demands for crude oil and refined products. The price structure of the crude market has been saved through the concerted action of California operators. Continuation of effort to control the supply of crude in California and elsewhere will insure a continuation of normal market values of both crude and refined oils.

Tulsa.—Transcontinental Oil Company plans to deepen Bolen 4, in Section 19-5-5, in the Bebee district of northern Pontotoc County, below the present producing horizons. Present depth 2410 feet in the Viola lime. No test in the Bebee district has been carried to the contemplated 3500 feet. Drilling will be done with standard tools. Production in the district has been from the Hunton and Viola limes.



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THE Moore Champion DERRICK

Markets--Production--Crude Prices

H. J. STRUTH, *Staff Economist, Houston, Texas*

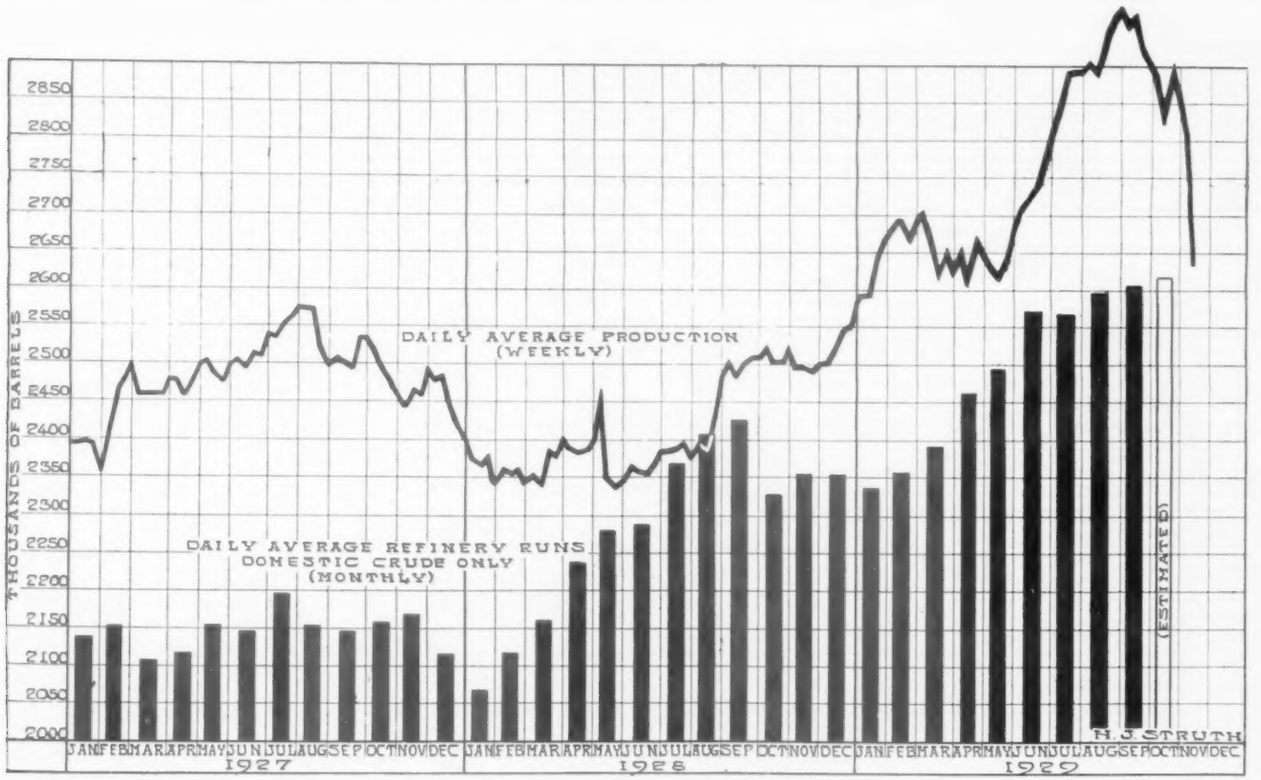
California Curtailment Practically Eliminates Excess Crude

THE announcement by the Standard Oil Company of California on November 8 to the effect that crude prices had been restored, following a precipitous decline in production at Santa Fe Springs and Long Beach, is the most important news the industry has received in years. Curtailment effort, forced by the drastic reduction in light oil prices last month, has with a single stroke practically eliminated the nation's excess crude oil production. The success of unified effort of California producers in eliminating excessive production demonstrates to a high degree that the industry's economic laws are more effective than perhaps any other single force. The price cut came at a most opportune time and can be said to have practically saved the industry from impending disaster. The incentive of a restoration of former prices has spurred California operators on to the accomplishment of a task that was until recently declared impossible of realization. Advices from California now indicate that the limits prescribed for the state will undoubtedly be fully realized within another week.

Texas Still Overproducing

A decline of 145,500 barrels in California's daily crude production, combined with a further cut of 44,200 barrels in Oklahoma, resulted in bringing last week's daily average crude production down to the saner level of 2,632,050 barrels, a net decline of 181,200 barrels. As a result of serious determination of California operators to eliminate overproduction, the industry's total excess has declined to 172,038 barrels; California's excess having subsided to 72,169 barrels. This is indeed an important turn of events for the industry that probably marks the beginning of a better understanding that should eliminate the necessity to repeat drastic price revisions in the future. Texas remains as the only serious overproducer in the country, with an excess over last year's daily average of 137,245 barrels, or the greater part of the nation's present

DOMESTIC PRODUCTION AND REFINERY RUNS



excessive production. With every indication that further reductions in California's output will be realized shortly, it looks as though Texas will become conspicuous in this light. Texas has demonstrated the feasibility of production control through proration in Winkler and Pecos Counties. What is needed now is concerted effort of producers within the newer flush areas of that state, particularly in North and Central Texas and the Gulf Gulf Coast, to curtail production in conformity with current demand. If this is done immediately, the industry will be in an absolute state of equilibrium that cannot fail to result in prosperity throughout 1930. Last week, Texas, outside of the Gulf Coast registered an increase in production of 6600 barrels, while the Gulf Coast area showed a gain of 3550 barrels. Practically all other sections of the United States registered declines.

Following are the outstanding changes recorded for the principal flush areas of the United States during the past week:

		Barrels
Santa Fe Springs	Decrease	89,000
Long Beach	Decrease	44,000
Seal Beach	Decrease	15,000
Ventura Avenue	Decrease	3,000
Elwood	Decrease	1,000
Seminole	Decrease	1,300
Bowlegs	Decrease	1,800
Little River	Decrease	1,250
Earlsboro	Decrease	4,850
Allen	Decrease	2,100
Oklahoma City	Decrease	27,800
Sasakwa	Decrease	3,450
Gray County	Decrease	2,350
Howard County	Increase	3,100
Pecos County	Increase	6,300
Refugio County	Increase	2,100
Humble	Increase	6,400

Further declines expected in California fields will undoubtedly bring the country's average production down to a point well below 2,600,000 barrels by the end of this week. This outlook, combined with fulfillment of existing agreements in Oklahoma and Kansas appear to insure that production will decline throughout the balance of this year. The inauguration of further effort to prorate production in various flush areas of Texas will enable the industry to unload a part of the burden in storage and place it in a position to profit from the indicated larger demand next year.

HOW LAST WEEK'S DAILY AVERAGE PRODUCTION COMPARES WITH AVERAGE OF 1928

	Daily Av'ge Year 1928 (Bureau of Mines Data)	Daily Av'ge November 11, 1929 (A. P. I. Wkly Prod. Rept.)	Excess
Oklahoma-Kansas	786,585	727,250	**59,335**
Texas-Louisiana-Arkansas	849,205	986,450	137,245
California	633,831	706,000	72,169
Balance of United States	190,391	212,350	21,959
Total United States	2,460,012	2,632,050	172,038
Mexico-Central and South America	561,339	609,249*	47,910
Grand Total	3,021,351	3,241,299	219,948

*As of March 30, 1929—latest date available.
Bold face figures denote deficit.

Oklahoma Outlook Improved

Oklahoma operators are more optimistic over the winter crude oil market as a result of the curtailment of California production and restoring of prices there, which together with success of their own proration efforts, makes it appear that they should receive a better demand for their products than anticipated. In all probability the present market will be able to hold until next spring when it should take care of itself. Although all storage is practically filled, the Mid-Continent oil industry should find itself entering 1930 in better shape than any entrance into a new year for several years.

As a result of this, it is expected that little or no trouble will be encountered in getting the support of the operators in adhering to the conservation efforts.

Next week's production figures are expected to show a further material decline for California. Within 10 days Santa Fe Springs production was reduced from 270,000 barrels to 150,000 barrels, while at Long Beach the total was brought down from 170,000 barrels to an even 100,000 barrels. Never before has a town-lot or intensely developed area in California been able to show such startling results. Last week's figures only partially recorded the amazing results obtained following the ultimatum that production would have to be drastically reduced before the former price would be restored. The restoration of former prices in the three Los Angeles Basin fields means an average increase of about 75 cents per barrel at Santa Fe Springs and about 60 cents a barrel at Long Beach and Seal Beach. Present prices at Santa Fe Springs range from 89 cents for 21 gravity oil to $1.65 for the 39 gravity product. At Long Beach and Seal Beach proper the restored prices range from 70 cents for the lowest grades to $1.35 for 32 gravity crude, with an average price of about $1.17. In all fields, the average increase was more than 100 per cent. In posting the former prices, which were effective at 7 a. m., November 8, the Standard Oil Company of California waived the 10-day agreement and immediately started paying the increased prices. Since the decreases posted about three weeks ago were effective 10 days after announcement, it is evident that operators sold oil at reduced prices for only a few days, at most. Other purchasing companies immediately followed the Standard Oil Company's lead.

Price Cut Caused It

Without the sweeping price reductions, production could not have been brought down to even its present level. Apparently, many operators were determined not to reduce output unless the state forced such action through the advent of the gas

Details on Critical Fields

Pool—	Oil Wells Completed	Total Initial Production	Initial Per Well	Number Producing Wells	Daily Production Barrels	Daily Prod. Per Well	Rigs Up	Wells Drilling
WEST TEXAS:								
Hendrick	617	3,115,955	5,050	568	109,695	192*	.	3
Church & Fields	201	206,285	1,026	196	.....	....	1	7
Gulf-McElroy	81	61,315	757	80	14,415	180	..	2
Yates	351	2,404,165	6,849	347	135,255	390*	1	9
TEXAS PANHANDLE:								
Gray County	508	353,155	695	483	63,550	132*	8	64
OKLAHOMA:								
Oklahoma City[1]	19	120,533	6,344	14	43,248	3,089	14	160
East Earlsboro	46	88,715	1,928	48	30,169	628	8	79
CALIFORNIA:								
Santa Fe Springs[2]	407	1,326,850	3,260	205	140,000	683	25	204

*Production partially pinched.
[1]Oklahoma City has 33 wells producing, but only 19 really completed. Under agreement only half of the wells are permitted to produce each day. East Earlsboro is prorated 40 per cent.
[2]Includes deep zone production only. For field total add 200 wells and 15,000 bbls.

CRUDE RUNS TO STILLS, GASOLINE AND GAS AND FUEL OIL STOCKS, WEEK ENDING NOVEMBER 2, 1929

(Figures in barrels of 42 gallons)

District—	Potential Daily Capacity	Potential Capacity Reporting Total	Potential Capacity Reporting Per Cent	Crude Runs to Stills Total	Crude Runs to Stills Daily Average	Crude Runs to Stills Per Cent Operated	Gasoline Stocks	Gas & Fuel Oil Stocks
East Coast	605,700	605,700	100.0	3,441,600	491,700	81.2	4,355,000	9,026,000
Appalachian	128,100	115,200	89.9	649,600	92,800	80.6	800,000	766,000
Indiana, Illinois, Kentucky	360,000	355,000	98.6	2,079,000	297,000	83.7	4,116,000	3,651,000
Oklahoma, Kansas, Missouri	462,200	398,200	86.2	1,938,400	276,900	69.5	2,235,000	3,964,000
Texas	775,800	712,000	91.8	4,035,500	576,500	90.0	4,974,000	14,366,000
Louisiana-Arkansas	300,600	286,000	95.1	1,439,000	205,600	71.9	1,567,000	5,033,000
Rocky Mountain	148,900	136,300	91.5	407,800	58,300	42.8	1,637,000	992,000
California	897,400	891,400	99.3	5,105,600	729,400	81.8	13,895,000	110,034,000
Total Week November 2	3,678,700	3,499,800	95.1	19,096,500	2,728,200	78.0	33,579,000	147,832,000
Total Week October 26	3,491,200	3,330,400	95.4	19,563,400	2,794,800	83.9	32,802,000	147,955,000
Texas (Gulf Coast	526,500	526,500	100.0	3,138,500	448,400	85.2	4,192,000	10,904,000
Louisiana (Gulf Coast)	177,500	177,500	100.0	950,000	135,700	76.5	1,302,000	4,285,000

conservation law. Thus, it is evident that the decision to drastically reduce prices was a greater force to obtain conservation of crude petroleum than any other single factor. The appointment of Paul Grimm as umpire at Santa Fe Springs was the signal to shut in 125,000 barrels without further delay. Similarly, the appointment of Neil Anderson as umpire at Long Beach resulted in the signing by 217 operators of an agreement to immediately shut in 70,000 barrels of oil. The results that have been attained speak will for both umpires and operators, and show that production can be maintained at a prescribed level, according to market requirements.

The result of successful curtailment effort in California has stimulated the market structure of both crude and refined products. Undoubtedly, its effect will prove to be a national market factor in preventing what formerly appeared as certain demoralization of the industry's price structure.

While Texas has not figured prominently in the widespread production curtailment that has materially lowered the current output of California, Oklahoma and Kansas flush fields, the former state has successfully clamped the lid down on three important areas in West Texas for many months. Both production and drilling is being systematically restricted in the Panhandle and Luling districts of Texas, and due to cooperation of lease owners a competitive drilling campaign has been avoided so far for the recently discovered Van field is concerned. The latter is slated to be drilled under a unit plan of operation, and the first three tests spudded this week are being operated on such a basis, although all lease owners have not signed up.

A surplus of crude production exists in a few isolated areas in Texas due to crude purchasing agencies having limited their runs to actual requirements rather than inadequate transportation facilities, and corrective measures are now being taken to clarify the situation.

The Howard-Glasscock County district in West Texas has recently become a sore spot in the market even though operators held production below proration allowances. Gray County section of the Texas Panhandle has had a surplus output, but operators are remedying the situation by voluntary curtailment of drilling and production. The Darst-Manford field, located in the Luling district, is a potential disturber of the local market situation owing to a number of new tests being started on short time leases. Voluntary curtailment has held this area back for several months, and indications are that the operators defying the shutdown agreement will be forced to provide their own crude market, as purchasing agencies are opposed to making any increase in crude acceptances.

Deep Test For Germany

Tulsa.—The North European Oil Company is to drill a wildcat test near Ovelgonne, Germany, to a depth of 5000 feet, unless production is encountered at shallower depths. American ideas and experience are being used in the development program of the company, which includes drilling several other tests in the state of Oldenburg. L .Hansen, veteran drilling man of California, has supervision of the company's drilling and has recruited his crews from the American fields. American rotary equipment is to be used.

IMPORTS OF PETROLEUM AT PRINCIPAL UNITED STATES PORTS

(Barrels of 42 gallons)

	Total Month October	Total Month Sept.	Week Ended Nov. 2	Week Ended Oct. 26
AT ATLANTIC COAST PORTS—				
Baltimore	1,238,000	989,000	296,000	429,000
Boston	326,000	270,000	202,000	68,000
New York	4,250,000	4,099,000	906,000	1,009,000
Philadelphia	1,183,000	1,627,000	280,000	315,000
Others	1,198,000	989,000	102,000	*329,000
Total	8,195,000	7,974,000	1,786,000	2,150,000
Daily Average	264,355	265,800	255,142	307,142
AT GULF COAST PORTS				
Galveston District	205,000	207,000	66,000	.....
New Orleans and Baton Rouge	415,600	688,000	39,000	127,000
Port Arthur and Sabine District	343,000	160,000	135,000	70,000
Tampa	137,000	40,000	40,000	41,000
Total	1,100,000	1,095,000	280,000	238,000
Daily Average	35,484	36,500	40,000	34,000
AT ALL UNITED STATES PORTS—				
Total	9,295,000	9,069,000	2,066,000	2,388,000
Daily Average	299,839	302,300	295,142	341,142

*—Revised.

CALIFORNIA OIL RECEIPTS AT ATLANTIC AND GULF COAST PORTS

(Barrels of 42 gallons)

	Total Month October	Total Month Sept.	Week Ended Nov. 2	Week Ended Oct. 26
AT ATLANTIC COAST PORTS—				
Baltimore	281,000	583,000	121,000	154,000
Boston	145,000	.....	.....	.....
New York	1,304,000	*1,030,000	266,000	372,000
Philadelphia	372,000	357,000	.....	.....
Others	300,000	186,000	70,000	135,000
Total	2,402,000	2,156,000	457,000	661,000
Daily Average	77,484	71,867	65,285	94,429
AT GULF COAST PORTS—				
Total	127,000	*202,000	55,000	.....
Daily Average	4,097	6,733	7,857	.....
AT ATLANTIC & GULF COAST PORTS—				
Total	2,529,000	2,358,000	512,000	661,000
Daily Average	81,581	78,600	73,142	94,429
Distribution of Total California Oil Receipts is as Follows:				
Crude	.....	73,000	.....	.....
Gasoline	2,060,000	1,949,000	341,000	503,000
Kerosene	200,000	53,000	70,000	80,000
Gas Oil	269,000	197,000	101,000	78,000
Fuel Oil	.....	78,000	.....	.....
Lubricants	.....	8,000	.....	.....
Total	2,529,000	2,358,000	512,000	661,000

*—Revised.

United States Daily Average Production

Figures below are taken from the complete revised estimates of the AMERICAN PETROLEUM INSTITUTE except for the current week, which are advance estimates issued by the A. P. I. and are subject to revision:

1928	Oklahoma	Kansas	Texas (Outside Gulf Coast)	Gulf Coast	North Louisiana	Arkansas	Eastern States	Rocky Mountain	California	United States Daily Av.	United States Total
June	594,850	105,200	554,400	135,400	42,350	102,850	109,300	82,400	643,400	2,370,150	71,104,500
July	587,150	102,750	597,250	133,650	42,150	90,700	113,400	80,400	644,700	2,392,150	74,156,600
August	656,350	102,200	604,000	130,200	40,200	87,500	113,300	77,700	634,150	2,445,600	75,534,600
September	724,850	99,750	604,150	129,500	39,050	84,700	112,550	78,850	631,650	2,505,050	75,151,500
October	741,350	97,900	598,550	129,950	38,800	83,550	114,000	83,300	624,450	2,511,850	77,867,900
November	715,750	96,600	586,350	135,100	38,600	83,000	109,700	81,150	653,050	2,499,300	74,978,300
December	710,600	97,200	603,700	135,050	37,300	81,350	113,450	74,600	697,850	2,551,100	79,084,400
1929											
January	722,550	97,150	632,500	136,750	36,650	78,600	111,950	73,200	747,250	2,635,600	81,703,600
February	714,800	95,950	643,350	142,300	35,700	74,600	108,550	71,750	797,800	2,684,800	75,204,400
March	666,500	95,500	662,500	147,750	35,800	74,250	108,850	70,400	786,000	2,647,400	82,068,350
April	665,600	106,400	650,100	154,550	35,550	72,900	110,850	69,400	781,350	2,646,700	79,402,100
May	679,650	115,400	651,100	150,350	35,350	71,500	114,150	72,850	749,250	2,639,600	81,827,600
June	685,200	120,750	688,200	147,500	35,700	70,050	116,750	72,000	827,200	2,763,400	82,902,250
July	722,050	124,250	718,950	148,150	35,750	68,650	122,000	74,250	874,850	2,888,900	89,555,250
August	728,100	127,950	750,750	153,100	36,300	66,900	126,600	77,900	873,300	2,940,900	91,167,250
September	714,050	128,450	741,200	156,600	37,050	65,300	137,250	78,600	874,850	2,933,350	88,000,500
October 5	659,650	124,500	728,050	160,300	43,700	64,950	138,750	80,850	886,300	2,887,050	20,209,350
Oct. 12	650,550	112,100	715,550	165,150	41,200	64,450	137,350	79,250	872,500	2,838,100	19,866,700
Oct. 19	708,250	111,500	713,800	168,250	39,450	64,800	137,050	77,600	882,500	2,903,200	20,322,400
Oct. 26	680,650	110,700	710,750	171,000	38,200	63,950	137,900	76,050	880,500	2,869,700	20,087,900
Nov. 2	661,450	110,450	706,050	169,100	36,200	64,650	138,000	75,850	851,500	2,813,250	19,692,750
Nov. 9	617,250	110,000	712,650	172,650	36,700	64,450	136,350	75,150	706,000	2,632,050	18,424,350
Increase	.....	.....	6,600	3,550	500	.....	.....	.....	.....	.....	.....
Decrease	44,200	450	.....	.....	.....	200	1,650	700	145,500	181,200	1,268,400

TEXAS
(Outside Gulf Coast)
PANHANDLE DISTRICT

	Nov. 9	Nov 2
Carson County	10,000	9,500
Gray County	63,850	66,200
Hutchinson County	27,150	27,650
Wheeler County	700	700
Others	800	850
Total	102,500	104,900

NORTH TEXAS

Archer County	18,100	18,250
Burkburnett	9,150	9,100
Electra	11,400	11,500
Iowa Park-KMA	4,550	4,500
Montague and Cooke Counties	16,500	16,600
Wilbarger	30,500	30,500
Others	900	800
Total	91,100	91,250

WEST CENTRAL TEXAS

Brown County	11,400	11,200
Callahan County	3,500	3,500
Coleman County	8,900	8,800
Eastland-Desdemona	6,800	6,800
Jack County	3,700	3,750
Palo Pinto County	550	500
Shackelford County	10,100	9,950
Stephens County	6,400	6,400
Throckmorton County	600	600
Young County	6,400	6,450
Others	1,400	1,150
Total	59,750	59,100

WEST TEXAS

Crane-Upton Counties	44,300	45,400
Crockett County	2,150	2,200
Howard County	42,700	39,660
Jones County	2,700	2,700
Mitchell-Scurry Counties	2,500	2,450
Pecos County	144,100	137,800
Reagan County	17,200	17,350
Winkler County	108,700	109,700
Others	3,050	2,950
Total	367,400	360,150

EAST CENTRAL TEXAS

Boggy Creek	3,400	3,400
Corsicana-Powell	7,100	7,100
Currie	400	450
Mexia	5,000	5,150
Nigger Creek	300	250
Richland	300	300
Wortham	1,000	1,000
Van Zandt County	250	300
Total	17,750	17,900

SOUTHWEST TEXAS

Dale	400	400
Laredo District	9,550	9,400
Luling	10,900	10,850
Lytton Springs	900	900
Somerset	1,400	1,200
Salt Flat	33,900	34,900
Refugio	14,400	12,300
Others	2,700	2,800
Total	74,150	72,750
Total Tex. (Outside G. Coast)	712,650	706,050

TEXAS GULF COAST

Barbers Hill	22,700	22,000
Batson	1,300	1,300
Big Creek	5,300	6,150
Blue Ridge	2,400	2,500
Boling	1,300	1,400
Damon Mound	500	500
Goose Creek	5,450	5,400
Hull	9,800	9,950
Humble	17,300	10,900
Orange County	2,500	2,600
Pierce Junction	12,100	12,100
Raccoon Bend	8,500	8,450
Saratoga	1,000	1,000
Sour Lake	2,400	2,500
South Liberty	6,200	5,900
Spindle Top	21,900	22,800
Sugar Land	11,650	11,600
West Columbia	6,200	6,400
Washington County	1,700	1,850
Fannett	3,200	4,250
Others	5,600	5,100
Total	149,000	144,650
Texas Total	861,650	850,700

OKLAHOMA

Asher	5,200	5,300
Carr City	9,050	9,950
Logan County	16,400	15,850
Braman	3,650	3,650
Blackwell	3,750	3,750
Hubbard	1,700	1,700
Thomas	800	800
Tonkawa	9,000	9,000
Garber	4,750	4,750
Burbank	17,600	17,750
Osage (outside Burbank)	26,550	26,400
Cushing	15,050	15,200
Yale Jennings	6,450	6,450
Davenport	1,300	1,300
Bristow Slick	19,000	19,500
North Okmulgee	11,300	11,350
Lyons Deaner	7,059	7,050
Cromwell	7,700	7,700
Papoose	3,300	3,300
Wewoka	4,300	4,300
Seminole	25,950	27,250
East Seminole	5,050	5,200
Bowlegs	24,850	26,650
Searight	10,500	10,450
Little River	68,900	70,150
Earlsboro	61,750	66,600
Duncan District	8,250	8,250
Graham	3,900	3,900
Fox	1,300	1,300
Healdton	12,650	12,600
Hewitt	7,800	7,800
Scholem Alechem	12,800	12,850
Pearson	900	900
St. Louis	50,300	50,950
Allen	20,250	22,350
Maud	10,450	10,400
Mission	16,750	17,050
Okla. City	37,350	65,150
Sasakwa	8,200	11,650
Others	55,450	54,950
Total	617,250	661,450

CALIFORNIA

Santa Fe Springs	163,000	252,000
Long Beach	124,000	168,000
Huntington Beach	42,000	42,000
Dominguez	8,000	8,000
Inglewood	23,000	23,000
Ventura Avenue	58,000	62,000
Midway-Sunset	71,500	71,500
Seal Beach	22,000	37,000
Elwood-Goleta	29,000	30,000
Kettleman Hills	10,000	10,000
Others	155,500	155,500
Total	706,000	859,000

KANSAS

Greenwood County	20,500	20,300
Florence-Covert	950	950
Peabody-Ebling	3,100	3,100
Eldorado-Towanda	13,100	13,100
Augusta-Fox Bush	2,900	2,950
Rainbow Bend	1,100	1,100
Russell	3,000	3,000
Churchill	5,600	5,700
Oxford	3,750	3,750
Sedgewick	22,200	22,000
Others	33,800	34,500
Total	110,000	110,450

NORTH LOUISIANA

	Nov. 9	Nov 2
Homer	3,750	3,800
Haynesville	4,850	4,800
Caddo Light	10,700	10,250
Caddo Heavy	3,050	3,100
DeSoto-Red River	2,800	3,100
Elm Grove	500	500
Bellevue	650	650
Cotton Valley	2,500	2,500
Urania	5,700	5,700
Pleasant Hills	1,400	1,100
Others	800	700
Total North Louisiana	36,700	36,200

LOUISIANA GULF COAST

Bayou Boullion	100	150
East Hackberry	2,400	3,900
Hackberry	3,000	1,900
Edgerly	550	600
Evangeline	1,600	1,600
Lockport	3,850	3,850
Sorrento	100	150
Sulphur Dome	6,000	6,000
Vinton	4,200	4,600
Others	1,850	1,700
Total Louisiana Gulf Coast	23,650	24,450
Louisiana Total	60,350	60,650

ARKANSAS

El Dorado	4,350	4,350
Champagnolle	5,050	5,400
Smackover Light	5,800	5,800
Smackover Heavy	45,900	45,750
Stephens	1,000	1,000
Nevada	1,050	1,050
Lisbon	1,200	1,200
Others	100	100
Total	64,450	64,650

MOUNTAIN STATES
WYOMING

Salt Creek	30,400	31,450
Grass Creek	2,100	2,150
Elk Basin	750	750
Big Muddy	2,200	2,200
Lost Soldier	2,950	3,500
Rock River	2,200	2,200
Lance Creek	150	150
Oregon Basin	4,400	4,400
La Barge	2,250	2,200
Others	3,900	4,500
Total	51,300	53,500

MONTANA

Cat Creek	1,250	1,250
Sunburst	6,900	6,900
Pondera	2,400	2,450
Others	50	50
Total	10,600	10,650

COLORADO

Moffats (Craig)	1,100	1,100
Fort Collins	1,700	1,800
Florence	650	750
Others	1,650	1,700
Total	5,100	5,350

NEW MEXICO

Table Mesa	100	100
Artesia	850	850
Hogback	400	400
Rattlesnake	1,550	1,650
Lea & Eddy Counties	4,850	3,600
Others	400	400
Total	8,150	7,000
Total Mountain States	75,150	76,500

EASTERN STATES

(Including Ill., Ind., Ohio., W Va., Pa., Ky., N. Y. & Mich)	136,350	136,050

PRODUCTION SUMMARY

East of Rockies	1,850,900	1,883,950
Total U. S.	2,632,050	2,819,450

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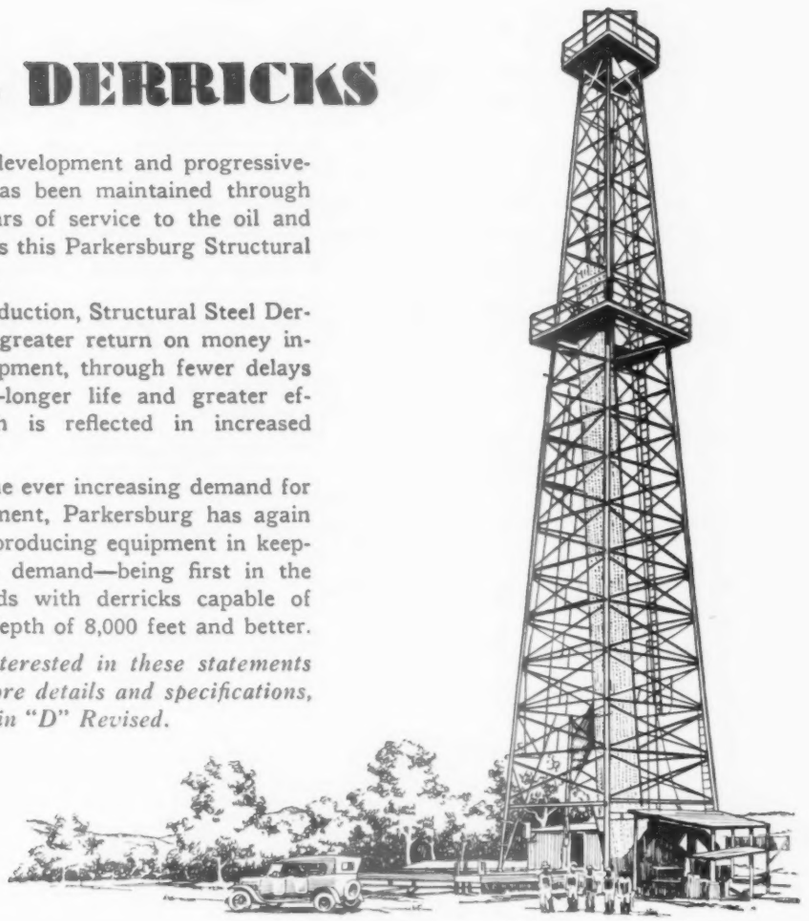
If you are interested in these statements and desire more details and specifications, ask for Bulletin "D" Revised.



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Check the equipment in which you are interested, tear out and return this coupon, with your name and address, to us, and we will send you complete information on the items checked.

CRUDE OIL PRICE QUOTATIONS

(Revised to November 12, 1929)

CRUDE OIL PRICE CHANGES

Effective November 8, Standard Oil Company of California announced the restoration of prices for crude oil produced in the Santa Fe Springs and Signal Hill fields, each to the quotations in effect prior to the reduction announced October 21. The advanced prices were effective on oil delivered on and after 7 a. m., November 8. The advanced prices mean an increase of approximately 75 cents per barrel for the average gravity crude at Santa Fe Springs and about 60 cents per barrel at Singal Hill.

EASTERN STATES
(Effective October 1, 1929)

Penna Grade Oil in New York Transit Lines (New York)	$3.05
Bradford District Oil in National Transit Lines (Pennsylvania)	3.05
Penn Grade Oil in National Transit Lines (Pennsylvania)	3.05
Penn Crude Oil in Southwest Pennsylvania Lines (West Virginia)	3.00
Penn Grade Oil in Eureka Pipe Line Lines (Pennsylvania)	2.90
Penna Grade Oil in Buckeye Pipe Line Lines (Ohio)	2.65
Cabell Grade Oil in Eureka Pipe Line Lines (West Virginia)	1.75
Corning 35-cent Grade Oil in Buckeye Pipe Line Co.'s lines	1.80
Corning 25-cent Grade Oil in Buckeye Pipe Line Co.'s lines	1.90
Somerset Oil in Cumberland Pipe Line lines (Kentucky)	1.80
Ragland Grade Oil in Cumberland Pipe Line lines (Kentucky) (Effective Jan. 29, 1929)	60
Keister (Pennsylvania)	1.20

CENTRAL STATES
(Effective May 21, 1929)
Posted by Ohio Oil Co.

Illinois	1.75
Indiana	1.57
Lima	1.80
Plymouth	1.28
Princeton	1.75
Waterloo	1.35
Wooster	1.90

WESTERN KENTUCKY

All grades	1.68

MID-CONTINENT
(Effective May 21, 1929)
Magnolia Petroleum Company

Under 26	.70
26 to 26.9 gravity	.75
27 to 27.9 gravity	.85
28 to 28.9 gravity	.90
29 to 29.9 gravity	.95
30 to 30.9 gravity	1.05
31 to 31.9 gravity	1.15
32 to 32.9 gravity	1.25

From 33 to 44 gravity and above, Magnolia Petroleum Company prices are the same as those of Carter Oil Company.

MID-CONTINENT
(Effective May 20, 1929)
Carter Oil Company, Gulf Pipe Line Company, Sinclair Pipe Line Company, Prairie Oil and Gas Company and The Texas Company

25 to 25.9 gravity	.90
26 to 26.9 gravity	.95
27 to 27.9 gravity	1.00
28 to 28.9 gravity	1.05
29 to 29.9 gravity	1.10
30 to 30.9 gravity	1.15
31 to 31.9 gravity	1.20
32 to 32.9 gravity	1.25
33 to 33.9 gravity	1.30
34 to 34.9 gravity	1.35
35 to 35.9 gravity	1.40
36 to 36.9 gravity	1.45
37 to 37.9 gravity	1.50
38 to 38.9 gravity	1.55
39 to 39.9 gravity	1.60
40 to 40.9 gravity	1.65
41 to 41.9 gravity	1.70
42 to 42.9 gravity	1.75
43 to 43.9 gravity	1.80
44 and above	1.85

PANHANDLE
(Effective May 20, 1929)
GRAY COUNTY
(Humble Oil & Refining Company, Magnolia Petroleum Company, Gulf Pipe Line Company

Below 29 gravity	.90
29 to 29.9 gravity	.95
30 to 30.9 gravity	1.00
31 to 31.9 gravity	1.05
32 to 32.9 gravity	1.10
33 to 33.9 gravity	1.15
34 to 34.9 gravity	1.20
35 to 35.9 gravity	1.25
36 to 36.9 gravity	1.30
37 to 37.9 gravity	1.35
38 to 38.9 gravity	1.40
39 to 39.9 gravity	1.45
40 to 40.9 gravity	1.50
41 to 41.9 gravity	1.55
42 to 42.9 gravity	1.60
43 to 43.9 gravity	1.65
44 and above	1.70

WHEELER COUNTY
(Humble Oil and Refining Company and Magnolia Petroleum Company)

Below 30 gravity	.90
30 to 30.9 gravity	.95
31 to 31.9 gravity	1.00
32 to 32.9 gravity	1.05
33 to 33.9 gravity	1.10
34 to 34.9 gravity	1.15
35 to 35.9 gravity	1.20
36 to 36.9 gravity	1.25
37 to 37.9 gravity	1.30
38 to 38.9 gravity	1.35
39 to 39.9 gravity	1.40
40 to 40.9 gravity	1.45
41 to 41.9 gravity	1.50
42 to 42.9 gravity	1.55
43 to 43.9 gravity	1.60
44 and above	1.65

CARSON-HUTCHINSON COUNTIES
(Humble Oil and Refining Company, Magnolia Petroleum Company and Gulf Pipe Line Company)

Below 32 gravity	.90
32 to 32.9 gravity	.95
33 to 33.9 gravity	1.00
34 to 34.9 gravity	1.05
35 to 35.9 gravity	1.10
36 to 36.9 gravity	1.15
37 to 37.9 gravity	1.20
38 to 38.9 gravity	1.25
39 to 39.9 gravity	1.30
40 to 40.9 gravity	1.35
41 to 41.9 gravity	1.40
42 to 42.9 gravity	1.45
43 to 43.9 gravity	1.50
44 and above	1.55

SOMERSET
Grayburg

Below 33 gravity	1.05
33 to 33.9 gravity	1.07
34 to 34.9 gravity	1.09
35 to 35.9 gravity	1.11
36 to 36.9 gravity	1.13
37 to 37.9 gravity	1.15
38 and above	1.17

CALIFORNIA CRUDE OIL PRICES AT THE WELL
(EFFECTIVE NOVEMBER 7, 1929)

Following are the current prices offered by Standard Oil Company for crude oil at the well: (Price per barrel of 42 gallons in fields indicated)

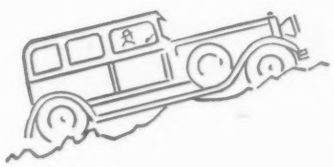
Gravity	Ventura*	Signal Hill	Alamitos Heights-Seal Beach	Huntington Beach	Inglewood	Olinda-Brea Canon	Athens-Rosecrans Dominguez	Elwood† Terrace	Torrance	Richfield	Whittier La Habra	Montebello	Coyote Hills	Santa Fe Springs	Newhall McKittrick Kern River	Midway-Sunset Elks Hills	Buena Vista Hills	ost Hills	Coalinga	Wheeler Ridge
14-14.9	$ .85	$ .70	$ .70	$ .70	$ .70	$ .70	$ ..	..	$ .70	$ .70	$ .70	$ .70	$ .70	..	$ .50	$ .50	$ .50	$ .50	$ .50	$ .50
15-15.9	.85	.70	.70	.70	.70	.70	..	..	.70	.70	.70	.70	.70	..	.50	.50	.50	.50	.50	.50
16-16.9	.85	.70	.70	.70	.70	.70	..	..	.70	.70	.70	.70	.70	..	.50	.50	.50	.50	.50	.50
17-17.9	.85	.70	.70	.70	.70	.70	..	..	.70	.70	.70	.70	.70	..	.50	.50	.50	.50	.50	.50
18-18.9	.85	.75	.75	.75	.75	.75	..	..	.75	.75	.75	.70	.75	..	.50	.56	.56	.56	.56	.56
19-19.9	.85	.80	.80	.80	.80	.80	..	..	.80	.80	.80	.75	.80	..	.50	.62	.62	.62	.62	.62
20-20.9	.85	.85	.85	.85	.85	.85	..	..	.85	.85	.84	.80	.84	..	..	.68	.68	.68	.68	.68
21-21.9	.86	.89	.89	.89	.89	.89	..	..	.89	.89	.88	.85	.88	.89	..	.74	.74	.74	.74	.74
22-22.9	.87	.93	.93	.93	.93	.93	..	..	.93	.93	.91	.90	.91	.92	..	.80	.80	.80	.80	.80
23-23.9	.90	.97	.97	.97	.97	.97	..	..	.97	.97	..	.95	.94	.95	..	.85	.85	.85	.85	.85
24-24.9	.94	1.01	1.01	1.01	1.01	1.01	1.01	..	1.01	1.01	..	.98	.97	.98	..	.90	.90	.90	.88	.88
25-25.9	.98	1.05	1.05	1.05	1.05	1.05	1.05	..	1.05	1.05	..	1.01	1.00	1.01	..	.95	.95	.95	.91	.91
26-26.9	1.02	1.09	1.09	1.09	1.09	1.09	1.09	..	1.09	1.09	..	1.04	1.04	1.04	..	1.00	1.00	1.00	.94	.94
27-27.9	1.06	1.13	1.13	1.13	1.13	1.13	1.13	..	1.13	1.13	..	1.07	1.08	1.07	..	1.05	1.05	1.05	.98	.97
28-28.9	1.10	1.17	1.17	1.17	1.17	1.17	1.17	..	1.17	1.17	..	1.10	1.12	1.10	..	1.10	1.10	1.10	1.02	..
29-29.9	1.14	1.21	1.21	1.21	..	1.21	1.21	..	..	1.21	..	1.13	1.16	1.15	..	1.16	1.16	1.16	1.06	..
30-30.9	1.18	1.25	1.25	1.25	..	1.25	1.25	..	..	1.25	..	1.16	1.20	1.20	..	1.22	1.22	1.22	1.10	..
31-31.9	1.23	1.30	1.30	1.30	..	..	1.30	..	..	..	..	..	..	1.25	..	1.28	1.28	1.28	1.14	..
32-32.9	1.28	1.35	1.35	1.35	..	..	1.35	..	..	..	..	..	..	1.30	..	1.34	1.34	1.34	1.18	..
33-33.9	..	..	..	..	..	..	1.41	..	..	..	..	..	..	1.35	..	1.40	1.40	1.40	1.22	..
34-34.9	..	..	..	..	..	..	1.47	1.16	..	..	..	..	..	1.40	..	..	..	1.46	1.26	..
35-35.9	..	..	..	..	..	..	1.53	1.22	..	..	..	..	..	1.45	..	..	..	..	1.30	..
36-36.9	..	..	..	..	..	..	1.59	1.28	..	..	..	..	..	1.50	..	..	..	..	..	..
37-37.9	..	..	..	..	..	..	1.65	1.34	..	..	..	..	..	1.55	..	..	..	..	..	..
38-38.9	..	..	..	..	..	..	1.71	1.40	..	..	..	..	..	1.60	..	..	..	..	..	..
39-39.9	..	..	..	..	..	..	1.77	1.46	..	..	..	..	..	1.65	..	..	..	..	..	..
40-40.9	..	..	..	..	..	..	1.83	1.52	..	..	..	..	..	..	..	..	..	..	..	..
41-41.9	..	..	..	..	..	..	1.89	1.58	..	..	..	..	..	..	..	..	..	..	..	..
42-42.9	..	..	..	..	..	..	1.95	1.64	..	..	..	..	..	..	..	..	..	..	..	..

KETTLEMAN HILLS—55 degrees Gravity and above $1.65 per barrel. *Union Oil Company. †Changed March 18, 1929.

(See Page 46)

NATIONAL ADVERTISING

makes it easier for you to get NEW BUSINESS



A paved highway rides better than a dirt road! And there's just as much difference between selling nationally advertised products and selling products that are not advertised, as there is between sailing along a paved highway and plodding along a mud road.

NATIONALLY advertised gasoline and motor oil require less *selling* effort on the part of the dealer because the advertising has already done a share of the job! Advertising makes a motorist either ask for the product by name, or accept the product readily when you offer it to him.

If you carry nationally advertised products, new business is surer to come and easier to handle. It takes less time and effort to sell—gives you more time and opportunity to plan, profit, and build.

SINCLAIR REFINING COMPANY, INC., 45 NASSAU STREET, NEW YORK
Atlanta • Boston • Chicago • Houston • Kansas City

SINCLAIR OPALINE

REG. U.S. PAT. OFF.

is **NATIONALLY ADVERTISED AS THE** *Extra Service* **MOTOR OIL**

CRUDE OIL PRICE QUOTATIONS (*Continued from Page 44*)

WEST TEXAS
(Humble, Gulf, Magnolia, The Marland Company and Southern Crude Oil Purchasing Company)*

Crane-Upton, Crockett, Howard, Pecos and Winkler Counties and Lea County, N. Mex.

Below 25 gravity	.70
25 to 25.9 gravity	.74
26 to 26.9 gravity	.78
27 to 27.9 gravity	.82
28 to 28.9 gravity	.86
29 to 29.9 gravity	.90
30 to 30.9 gravity	.94
31 to 31.9 gravity	.98
32 to 32.9 gravity	1.02
33 to 33.9 gravity	1.06
34 to 34.9 gravity	1.10
35 to 35.9 gravity	1.14
36 and above	1.18

*Gulf does not post in Winkler County; Magnolia posts in Crane, Upton and Winkler Counties. Southern Crude Oil Purchasing Company posts only in Crane, Upton and Winkler Counties.

MARKHAM
The Texas Company
(Effective May 20, 1929)

All grades	$1.00

LULING

All grades	.90

NORTH AND CENTRAL TEXAS
(Effective May 21, 1929)

Ranger, North Texas, Mexia, Powell, Richland, Wortham, Currie, Moran, Nocona and Lytton Springs Crude
(Humble Oil and Refining Company)

Below 25	.85
25 to 25.9 gravity	.90
26 to 26.9 gravity	.95
27 to 27.9 gravity	1.00
28 to 28.9 gravity	1.05
29 to 29.9 gravity	1.10
30 to 30.9 gravity	1.15
31 to 31.9 gravity	1.20
32 to 32.9 gravity	1.25
33 to 33.9 gravity	1.30
34 to 34.9 gravity	1.35
35 to 35.9 gravity	1.40
36 to 36.9 gravity	1.45
37 to 37.9 gravity	1.50
38 to 38.9 gravity	1.55
39 to 39.9 gravity	1.60
40 to 40.9 gravity	1.65
41 to 41.9 gravity	1.70
42 to 42.9 gravity	1.75
43 to 43.9 gravity	1.80
44 and above	1.85

SOUTH TEXAS

Mirando	.90
Salt Flat	1.25

GULF COAST
(Effective May 21, 1929)

Grade "A" all companies	1.30
Gulf Coast Light Oil, below 25	1.15
25 to 25.9 gravity	1.18
26 to 26.9 gravity	1.21
27 to 27.9 gravity	1.24
28 to 28.9 gravity	1.27
29 to 29.9 gravity	1.30
30 to 30.9 gravity	1.33
31 to 31.9 gravity	1.36
32 to 32.9 gravity	1.39
33 to 33.9 gravity	1.42
34 to 34.9 gravity	1.45
35 to 35.9 gravity	1.48
36 to 36.9 gravity	1.51
37 to 37.9 gravity	1.54
38 to 38.9 gravity	1.57
39 to 39.9 gravity	1.60
40 and above	1.63

*Humble Oil & Refining Company's postings on Gulf Coast Light stop at 35 to 35.9. Its price on all crudes above 35 to $1.37 per barrel.

Magnolia Petroleum Company's postings stop at 31 to 31.9.

CLASSIFICATIONS OF GULF COAST CRUDE

The Texas Company: GRADE A—Beaume gravity not over 26.0 degrees at 60 degrees Fahrenheit; sulphur not over 0.5 per cent; in distilling 500 cc. of the crude that part of the distillate cut between 65 per cent off and 85 per cent off shall have a pour test of zero or lower. GRADE B—All Gulf Coast heavy crudes which do not meet tests for Grade "A" or for Gulf Coast light.

Humble Oil & Refining Company: GRADE A—All crude conforming to the following tests: viscosity not less than 100 seconds Saybolt at 100 degrees Fahrenheit; sulphur not over .4 per cent; Beaume gravity not over 25 at 60 degrees Fahrenheit. Cold tests of distillates having a viscosity of 1000 seconds at 100 degrees Fahrenheit shall not be over 5 degrees Fahrenheit. GRADE B—Embraces all Coastal crude which does not meet the tests for "A" grade crude.

Gulf Pipe Line Company: GRADE A—Beaume gravity not over 24 at 60 degrees Fahrenheit; viscosity not less than 100 seconds universal Saybolt at 100 degrees Fahrenheit; and sulphur not over 0.4 per cent. The yield of 250 viscosity reduced distillate at 100 degrees Fahrenheit not less than 30 per cent, and this 30 per cent not heavier than 20 Beaume, and its pour test not above zero Fahrenheit. The reduced distillate to be secured by reducing the crude with fire and steam until the bottoms have a flash of not less than 540 degrees Fahrenheit, and not more than 560 degrees Fahrenheit open cup, and the entire distillate obtained in this way reduced to a distillate of 250 viscosity. The 10 per cent cut in the original distillate having an average viscosity of 500 seconds at 100 degrees Fahrenheit to have a pour test not higher than 5 degrees Fahrenheit. GRADE B—Embraces crude which does not meet test for "A" grade.

WYOMING-MONTANA
(Effective May 21, 1929)
Wyoming

Byron	1.33
Ferris	1.60
Elk Basin	1.65
Grass Creek	1.65
Rock Creek	1.40
Lost Soldier	1.05
Lance Creek	1.68
Mule Creek	1.20
Notches	.65
Big Muddy	1.43
Osage	1.65
Hamilton Dome	.85
Pilot Butte	1.75
Torchlight-Greybull	1.65
Lander	.80
Rex Lake	1.10
South Casper Creek-Poison Spider	1.00

Salt Creek
Midwest Refining Company

29 to 29.9 gravity	.90
30 to 30.9 gravity	.96
31 to 31.9 gravity	1.02
32 to 32.9 gravity	1.08
33 to 33.9 gravity	1.11
34 to 34.9 gravity	1.14
35 to 35.9 gravity	1.17
36 to 36.9 gravity	1.20
37 and above	1.23

MONTANA
(Effective May 24)

Sunburst	$1.75
Cat Creek	1.48
Lake Basin	2.20

NEW MEXICO

Artesia	1.08
Hogback	1.43

CANADA
(Effective May 21, 1929)

Oil Springs	2.27
Petrolia	2.20

LOUISIANA-ARKANSAS
(Effective May 22, 1929)

Homer, Haynesville, Caddo, El Dorado, De Soto and Crichton and Cotton Valley*
(Atlantic Oil Producing Company, Standard of Louisiana, Magnolia Petroleum Company and The Texas Company.)

27 to 27.9 gravity	$1.00
28 to 28.9 gravity	1.05
29 to 29.9 gravity	1.10
30 to 30.9 gravity	1.15
31 to 31.9 gravity	1.20
32 to 32.9 gravity	1.25
33 to 33.9 gravity	1.30
34 to 34.9 gravity	1.35
35 to 35.9 gravity	1.40
36 to 36.9 gravity	1.45
37 to 37.9 gravity	1.50
38 to 38.9 gravity	1.55
39 to 39.9 gravity	1.60
40 to 40.9 gravity	1.65
41 to 41.9 gravity	1.70
42 to 42.9 gravity	1.75
43 to 43.9 gravity	1.80
44 gravity and above	1.85

*Shreveport-Eldorado's postings stop at above 40 gravity.

The posting on Cotton Valley is same as Caddo. From 36 to 52 and above the regular gravity schedule is followed.

The Texas Company pays North Texas gravity scale in North Louisiana.

STEPHENS
(All Companies)

Below 28 gravity	.90
28 to 28.9 gravity	.94
29 to 29.9 gravity	.98
30 to 30.9 gravity	1.02
31 to 31.9 gravity	1.06
32 gravity and above	1.10

SMACKOVER
(All Companies)

Below 24 gravity	.85
24 and above	1.00
Bellevue	1.30
Jennings	1.15
Vinton	1.30
Edgerly	1.30
Starks Dome	1.30
Urania	1.00
Calion	.75

Skelly Oil Company Team Wins Safety Contest

Shreveport.—The "Safety First" team of the Skelly Oil Company of El Dorado, Arkansas, won first place in the first annual safety first contest held at the Louisiana State Fair, November 8. A cup offered by the safety council of the Mid-Continent Oil & Gas Association, as well as a cup offered by the fair association, was awarded the team. The National Safety Council awarded each member of the team a gold medal. The Mid-Continent cup must be won three years in succession for a team to retain it permanently.

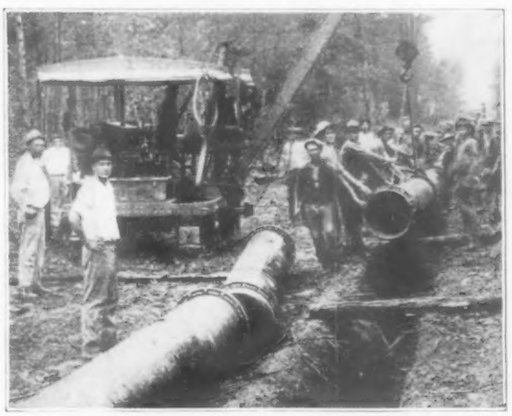
A team from the Louisiana Oil Refining Corporation's refinery at Bossier City won second place and the Ohio Oil Company's team of Haynesville, Louisiana, placed third. Team members were guests at a banquet that night at the Washington Hotel, at which William F. Chisholm, director of the minerals division of the Louisiana Conservation Commission, was toastmaster. Speakers included Don Wallace of Tulsa, safety director of the Mid-Continent Oil & Gas Association; H. N. Blakeslee of Chicago, representative of the National Safety Council; Joseph B. Elam, secretary of the Louisiana-Arkansas division of the Mid-Continent Oil & Gas Association, and Professor Pierce Cline of Centennary College.

NEW LINES CONTEMPLATED?

Investigate the new Hill, Hubbell & Company process of mechanically coating and wrapping pipe *at the mill.* Biturine Coatings are particularly adapted for use with this process.

Once the pipe is in the ground

Pipe is expensive. Pipe laying is a costly operation. But the taking up and reconditioning of old pipe lines—laid without the proper protection—is the most expensive operation of all.



Inter-State Gas Company Line from Monroe, La., to Natchez, Miss., Coated Outside with Biturine Enamel

From the instant that unprotected pipe has been lowered into the ground, corrosion starts its attack and begins to levy its appalling toll.

You can protect your pipe line investment *before* corrosion sets in. For twenty-three years this organization has been developing a group of protective coatings to meet the specialized needs of the oil industry.

Biturine Coatings have earned the respect and enthusiastic endorsement of pipe line operators and their engineering staffs, for Biturine has met the exacting requirements of rigid competitive tests and is today demonstrating its superiority in thousands of miles of pipe lines.

We will be glad to furnish you with records of service of Biturine coated lines upon receipt of your inquiry at any of the offices listed below.

BITURINE COATINGS

Biturine Enamel Primer* Biturine Coupling Solution
Biturine 70-30 Biturine Enamel Biturine Solution No. 5
Biturine Enamel Primer can be obtained with Inhiburine.

*INHIBURINE

This entirely new inhibitor with extraordinary anti-corrosive powers is now being incorporated into Biturine Primer whenever specified. Being solvent in Bitumens it becomes an integral part of the priming coat and functions as a second line of defense against corrosion should the Biturine Enamel Coating be penetrated.

GENERAL PAINT CORPORATION

HILL, HUBBELL & COMPANY DIVISION

CHICAGO NEW YORK TULSA HOUSTON SAN FRANCISCO OAKLAND
LOS ANGELES PORTLAND SEATTLE SPOKANE

2-29

3400 ft. — 35 days

Equipment: Model "J" Fort Worth Spudder Using Standard Tools

Cranfield and Reynolds, using one of the first "J" models, completed a 3400-foot well in the Exray pool, 8 miles south of Thurber, handling 662 ft. 10″, 1692 ft. 8¼″, 3200 ft. 6⅝″ casing, in 35 days' time, including setting above strings of casings and pulling the 10″ and 8¼″ strings.

Mr. R. C. Parker, Graham, Texas, completed a 3060-ft. well in Young County using Model "J" Fort Worth Spudder and Buda Power shown below, handled 660 ft. 12½″, 1350 ft. 10″, 1400 ft. 8¼″, 2100 ft. 6″, 3000 ft. 5-3/16″ casing, standard tools, 45 days on 3,050 ft.

R. W. Lindsay, Graham, Texas, drilled one hole with a Model "J" Spudder, and an offset hole with standard rig, at the same time. Read below what he says about comparative time and cost on practically the same hole.

BUDA ENGINE

Standard Equipment with all Fort Worth spudders. We are exclusive distributors for Buda Engines for all purposes in Texas, except Gulf counties.

Write for descriptive bulletin No. 2-1929.

Graham, Texas
Sept. 27, 1929

Fort Worth Well Machinery & Supply Co.
1709 Main Street
Fort Worth, Texas
Gentlemen:

In May, this year, we started drilling operations on the Costello ranch, 20 miles south east of Graham, using a Super-J Fort Worth Spudder on one hole and a standard rig on the offset. The crews on these two holes started work the same day.

The Spudder went right to work as soon as it was set up. It was 6 days before the standard rig started to make hole. By the time the standard rig spudded in the boys at the Spudder were down 500 feet, through hard formations.

At 1400 feet we brought in gas, about two million cubic feet, and the well is now shut off.

The Spudder saved me, in round figures, $3,000.00, as against the cost of the same hole made with the standard rig. The cost of the standard rig hole, everything included, was around $9,000.00; the cost of the Spudder hole $6,000.00, a saving of one-third.

The time required by the Spudder was 15 days; on the Standard rig 23 days — a saving of 8 days.

I thought you might be interested to know these facts.

Very sincerely yours,

R W Lindsay

There is a Spudder for Work at Every Depth to 3500 Feet

FORT WORTH WELL MACHINERY AND SUPPLY CO., Inc.

FORT WORTH TEXAS, U. S. A.

PERSONAL MENTION-MEN YOU KNOW

John Barrows of Shawnee, Oklahoma, has been elected chairman of the Shawnee-Seminole District Oil Scouts Association until January 1. This is his second term as head of the scouts in the Central Oklahoma area.

D. Matsuzawa, engineer for the Nippon Oil Company, Ltd., is in California making an exhaustive study of drilling, production and transportation facilities.

L. B. and **J. O'Neil,** brother oil operators of Great Falls, Montana, have purchased a seven-passenger Stinson Wasp monoplane for use in their business. The plane is equipped with a 425 horsepower Wasp engine which drives it at a speed of 115 miles per hour.

L. E. Lewis, production superintendent for the Simms Oil Company in the West Texas district, has resigned to assume a similar position with the Pure Oil Company in the Van pool, Central East Texas district. Since the latter company has been elected to carry out the unit plan of development in the Van pool, Lewis will be the district superintendent of all operations of the six companies taking part. A. A. Goodman is to be Lewis' assistant.

L. David Wosk, who has had charge of the geological and lease office of the White Eagle Oil & Refining Company at Abilene, Texas, has transferred his office to 1003 Fort Worth National Bank building, Fort Worth, Texas.

Ira McFarland of Houston, comptroller of The Texas Company, was married November 2 at Sierra Madre, California, to Miss Minnette Wanstrath, daughter of Mr. and Mrs. George J. Wanstrath of St. Louis. Mr. and Mrs. McFarland are making a trip to Honolulu, and will return to Houston in December.

Burr McWhirt, valuation engineer for the Shell Petroleum Corporation, is in Michigan in the interests of his company.

H. J. Packard, engineer from the Denver office of the Continental Oil Company, is inspecting the producing and prospective oil fields of Michigan for his company.

C. K. Stillwagon has resigned from the engineering department of the Continental Oil Company, Wichita Falls, Texas, having accepted a position in the sales department of the Hughes Tool Company, headquarters at Houston.

L. G. Metcalf of the Union Oil Company of California, Los Angeles, has been appointed as a member of three general committees of the American Petroleum Institute to succeed Ralph R. Reed of the same company, resigned. The groups with which Mr. Metcalf will serve are the general committees on fire prevention, corrosion and oil pollution.

Major General Lytle Brown, chief of Army engineers, has been designated as the representative of the Secretary of War, James W. Good, on the technical committee of the Federal Oil Conservation Board, it was stated at the War Department November 7.

Sidney H. Keoughan, formerly president of the Continental Oil Company, has resigned his position as chairman of the executive committee of the company and will head a new organization being formed by New York capital. Mr. Keoughan was at one time a drilling contractor and operator in a number of Wyoming oil fields. He is one of the few remaining oil men who understand the oil industry thoroughly in nearly all of its branches. For the last several years he has lived in Denver.

A. Jacobsen and Sidney Powers of the Independent Oil and Gas Company have been making an inspection tour of certain California fields.

Paul Grimm, formerly general manager of the George F. Getty, Inc., interests, has been appointed umpire of the Santa Fe Springs field by independent operators. If the present move for curtailment is successful, Grimm will serve for at least three months.

G. V. Leece, formerly manager of the Los Angeles office of Gardner-Denver Company and now connected with the home office at Quincy, Illinois, has returned to hearquarters after an extensive trip to California.

Rodney S. Durkee, treasurer of General Petroleum Corporation and now comptroller of Standard Oil Company of New York while on a leave of absence from the California subsidiaries, is in New York, assisting the parent company in the adoption of the standardization accounting methods formulated by the A. P. I. Durkee was a member of the committee responsible for the improved system.

E. E. ("Deke") Deacon has been placed in charge of the Chicago Pneumatic Tool Company's new sales and service branch at Oklahoma City.

W. H. Mead, former general manager of the Texas prison system, has been engaged as manager of the Salt Flat Water Company, which was organized early in October by producing units in the Salt Flat field, Caldwell County, Texas, for the gathering and disposal of sulphur water produced with oil.

R. E. McClung, member of the land department of the Independent Oil & Gas Company at Tulsa, has been transferred to Fort Worth to become assistant to Gilbert Wood, who is manager of Texas operations for the company. W. R. Walker has been transferred from Fort Worth to San Antonio to become assistant to J. H. Turner, who is in charge of the latter zone office. J. Marshall Brown has been transferred from Midland, Texas, to Amarillo to carry on land and geological work for the Independent Oil & Gas Company in the Texas Panhandle.

Coleman Curry, 31, and Lewis Turner, 20, were asphyxiated November 5 while engaged in working on a storage tank in the Borger, Texas, field. The latter is credited with having lost his life in trying to rescue Curry.

Fred H. Wilcox, who has been a member of the geological staff of the Vacuum Oil Company in the West Texas district, is now connected with the Independent Oil & Gas Company, with headquarters at San Angelo, Texas.

W. E. Dunlap, manager of production of the Richfield Oil Company of California, has announced the following appointments, effective November 1:

Southern and Coast divisions: James Charlton, Jr., general superintendent, in charge of all field operations, for both divisions; H. F. Boggs, production superintendent for the Southern and Coast division; H. A. Brand, drilling superintendent, Long Beach, Huntington Beach and Potrero fields; Ira Brown, drilling superintendent, Santa Fe Springs and Whittier fields.

Northern division: L. S. Cox, general superintendent; Geo. R. Duncan, production superintendent, Elk Hills field; R. N. Cox, production superintendent, Midway-Sunset field; C. L. Poe, production foreman, Kern Front field; H. R. Gordon, lease foreman, Lost Hills field.

NOW *the*

TWO months ago we were so eager for the oil world to know of the coming revolutionary development in winch tractors that we announced "one-half" of the Rumely DoAll, stating that the other half was still on the blue prints but would be constructed as speedily as possible. Now, we announce the "second half and finished picture of the new Rumely DoAll Industrial Winch Tractor", the winch tractor that, in its first trials, is exceeding even our fondest expectations of performance.

SECOND HALF

and the finished picture of the

NEW

RUMELY DOALL *Industrial Winch* TRACTOR

SMALL

The Rumely DoAll Industrial Winch Tractor is a compact, ruggedly built, four cylinder machine, using a chain drive, driven direct from the main drive wheel shafts, on both sides, eliminating any possible chance of side strain from auxiliary transmissions—and all unnecessary parts.

SPEEDY

The Rumely DoAll Industrial Winch Tractor has four speeds forward and two reverse, giving an exceptionally high speed of line travel.

POWERFUL

Four speeds give tremendous lifting power, with more than ample breakage provided for any size job.

EASY TO HANDLE

The Rumely DoAll Industrial Winch Tractor turns in its own length and steers easily with one hand. Few levers, all within convenient reach of the operator, simplify manipulations. It is smooth running and speedy on the road and at the well.

ALL PARTS BEARING EQUIPPED

All winch parts are equipped with anti-friction New Departure ball bearings.

The Rumely DoAll Industrial Winch Tractor is the product of our years of experience in building winch tractors. It is designed to handle every job where the operator does not feel the absolute need for the big, Rumely OilPull Master Tractor. Limited numbers are now available.

—Send all inquiries and orders to - - -

FRED E. COOPER

Special Rumely Representative and Developer of Oil Field Machinery

18 S. MADISON TULSA, OKLA.

Louisiana-Arkansas Division Names Officers and Committees

SHREVEPORT.—Clyde R. Minor, vice-president of the Gulf Refining Company of Louisiana, was unanimously elected president of the Louisiana-Arkansas division of the Mid-Continent Oil and Gas Association, at the annual meeting of members held here November 8.

Mr. Minor served as first vice-president of the division last year. He succeeds M. J. Grogan, vice-president of the Louisiana Oil Refining Corporation, who served as president for two years. Mr. Grogan and other retiring officers were given a vote of thanks for their services.

Other officers also unanimously chosen for the ensuing year are: First vice-president, F. Ray McGrew, vice-president of the Standard Oil Company of Louisiana; vice-presidents: J. R. Crawford, independent operator; N. C. McGowan, vice-president of the Palmer Corporation of Louisiana; and C. A. Richardson, Lake Charles; treasurer, Ben Johnson, Shreveport (re-elected); and secretary, Joseph B. Elam, Shreveport, (re-elected).

The following standing committees were also unanimously elected:

DIVISIONAL EXECUTIVE COMMITTEE

R. E. Allison, Shreveport.
W. H. Anders, Columbian Carbon Company, Monroe.
J. S. Atkins, Jr., Shreveport-El Dorado Pipe Line Company, Shreveport.
Geo. O. Baird, Shreveport.
Sam K. Baird, Shreveport.
T. H. Barton, Lion Oil & Refining Company, El Dorado.
George Belchic, Northwest Louisiana Gas Company, Shreveport.
Clyde M. Bennett, Vacuum Oil Company, Houston.
C. H. Benckenstein, Vinton Petroleum Company, Lake Charles.
E. W. Bissett, Skelly Oil Company, El Dorado.
W. T. Burton, Sulphur.
H. C. Chalkley, Sweet Lake Land & Oil Company, Lake Charles.
W. C. Coolidge, Atlantic Oil Producing Company, Shreveport.
J. R. Crawford, Shreveport.
James H. Dugan, El Dorado.
A. L. Edsell, Louisiana Oil Refining Corporation, Shreveport.
O. H. Eichelberger, Vacuum Oil Company, Lake Charles.
Walter D. George, Shreveport.
B. H. Gray, Shreveport-El Dorado Pipe Line Company, Shreveport.
M. J. Grogan, Louisiana Oil Refining Corporation, Shreveport.
M. W. Grimm, Tidal Oil Company, Shreveport.
E. J. Harmon, Dixie Oil Company, Incorporated, Shreveport.
D. W. Harris, Arkansas Natural Gas Corporation, Shreveport.
J. S. Hasson, The Ohio Oil Company, Incorporated, Shreveport.
E. D. Holcomb, Magnolia Petroleum Company, Shreveport.
R. A. Hunter, Dixie Oil Company, Incorporated, Shreveport.
Ben Johnson, Commercial National Bank, Shreveport.
C. R. Minor, Gulf Refining Company of Louisiana, Shreveport.
C. E. Morris, Greenwood Production Company, Shreveport.
J. R. Munce, Arkansas Natural Gas Corporation, Shreveport.
J. R. McComic, Shell Petroleum Company, Shreveport.
J. H. McFarlane, Hollyfield & McFarlane, El Dorado.
N. C. McGowen, Louisiana Gas & Fuel Company, Shreveport.
F. Ray McGrew, Standard Pipe Line Company of Louisiana, Shreveport.
C. O. Noble, Lake Charles.
W. C. O'Ferrell, Standard Oil Company of Louisiana, El Dorado.
J. R. Parten, Woodley Petroleum Company, Shreveport.
Walter G. Ray, Ray-Dawes Drilling Company, Shreveport.
J. H. Riedemann, Crystal Oil Refining Company, Shreveport.
M. O. Rife, Gulf Refining Company of Louisiana, Shreveport.
Wm. Sebastian, Shreveport.
John E. Shatford, Ouachita Valley Refining Company, El Dorado.
G. R. Stevens, Simms Oil Company, Shreveport.
M. G. Stewart, Pelican Well Tool & Supply Company, Shreveport.
W. L. Stratton, Standard Oil Company of Louisiana, Shreveport.
A. F. Tarver, Shreveport.
A. H. Tarver, Shreveport.
Thad Wynn, Humble Oil & Refining Company, Lake Charles.
R. W. Wimbish, Louisiana Land & Exploration Company, Lake Charles.

LEGAL COMMITTEE

J. S. Atkinson, Gulf Refining Company of Louisiana, Shreveport.
Yandell Boatner, Pugh, Grimmet & Boatner, Shreveport.
Roy L. Benoit, The Ohio Oil Company, Inc., Shreveport.
Chas. H. Blish, The Texas Company, Shreveport.
John B. Files, Shreveport-El Dorado Pipe Line Company, Shreveport.
G. W. Foster, The Texas Company, Houston.
T. L. Foster, Sun Oil Company, Dallas.
W. H. Francis, Magnolia Petroleum Company, Dallas.
Fred Fuller, Atlantic Oil Producing Company, Dallas.
Thos. J. Gaughan, Gaughan & Sifford, Camden.
R. A. Hunter, Shreveport.
J. K. Mahony, Mahony & Yocum, El Dorado.
Chairman, T. M. Milling, Standard Oil Company of Louisiana, Shreveport.
W. M. Phillips, Shreveport.
W. H. Rector, Patterson & Rector, El Dorado.
John H. Tucker, Jr., Smitherman, Tucker & Mason, Shreveport.
H. C. Walker, Jr., Goldstein & Walker, Shreveport.

DIVISIONAL FINANCE COMMITTEE

C. R. Minor, chairman, Gulf Refining Company of Louisiana, Shreveport.
M. J. Grogan, Louisiana Oil Refining Corporation, Shreveport.
J. S. Hasson, Ohio Oil Company, Inc., Shreveport.
E. J. Harmon, Dixie Oil Company, Inc., Shreveport.
E. D. Holcomb, Magnolia Petroleum Company, Shreveport.
J. R. McComic, Shell Petroleum Company, Shreveport.
N. C. McGowen, Louisiana Gas & Fuel Company, Shreveport.
F. Ray McGrew, Standard Pipe Line Company of Louisiana, Shreveport.
Wm. Sebastian, Independent, Shreveport.
W. L. Stratton, Standard Oil Company of Louisiana, Shreveport.

GENERAL EXECUTIVE COMMITTEE

J. R. Crawford, Shreveport.
Geo. O. Baird, Shreveport.
E. D. Holcomb, Magnolia Petroleum Company, Shreveport.
D. W. Harris, Arkansas Natural Gas Corporation, Shreveport.

Oklahoma-Kansas Field Notes

WARREN BAKER, *Staff Representative, Tulsa, Oklahoma*

Oklahoma City Producer Makes Record Flow

Tulsa. — Oklahoma City production for the 24 hours ending 7 a. m. November 12 was 78,071 barrels from 18 wells, an everage of 4315 barrels per well. The big potential gauge anticipated from the field failed to materialize due to the opening of various wells at different periods, and because some of the wells were not opened.

The largest individual flow was from the T. B. Slick Glidden 1, Section 13-11-3w, which produced 13,896 barrels in 22 hours, cutting one per cent. water.

The Indian Territory Illuminating Oil Company and Foster Petroleum Company Thomas-Fuzzell 1, Section 13-11-3w, largest well in the pool and probably in the history of the state, was not opened, but probably will be opened at any time.

ARBUCKLE LIME TEST

Gypsy Oil Company's Barkus 9, Section 6-8-6, Mission field, Seminole area, important well which is drilling to the Arbuckle lime, has a total depth of 5604 feet and may possibly be in the top of the Arbuckle, although definite determination of its formation has not been made.

TULSA.—Drilling in of Oklahoma's greatest oil well, and perhaps the greatest high gravity oil producer in the United States, at Oklahoma City was the entire show in Oklahoma the past week. The well is Indian Territory Illuminating Oil Company and Foster Petroleum Company's Thomas-Fuzzell 1, SW SE SE Section 13-11-3w.

Pushed by a volume of gas estimated at 60,000,000 to 85,000,000 cubic feet, the well cleaned itself quickly after being bailed down to around 1000 feet. Flooded separators and lines caused the new well to be shut in after flowing only 15 minutes, during which time the well made over 1000 barrels, or at the rate of 4000 barrel hourly. The gravity of the oil is 39.8 degrees at a temperature of 68 degrees. Total depth is 6542 feet in the Arbuckle lime.

Preparations were made during the remainder of the week for the opening of the producer, which probably will not be until the middle of this week. Four six-inch lines are being run from the well to lease tanks; four eight-inch lines and one six-inch line to the risers. Two separators with a capacity of 50,000 barrels have been installed and another with 10,000 barrels capacity is also ready.

Due to the crowding of the separators solid streams of crude went into the air. A stiff south wind carried the crude far to the north, in some instances a mile.

The state's greatest oil well before the drilling in of the Thomas-Fuzzell well was the Sinclair Oil & Gas Company's Hartley 27, Section 18-22-3w, Garber pool, which produced 27,000 barrels of 45 gravity oil. Several wells in the state have made around 20,000 barrels in 24 hours. In West Texas several wells have been completed for greater flows, but these have been low gravity producers.

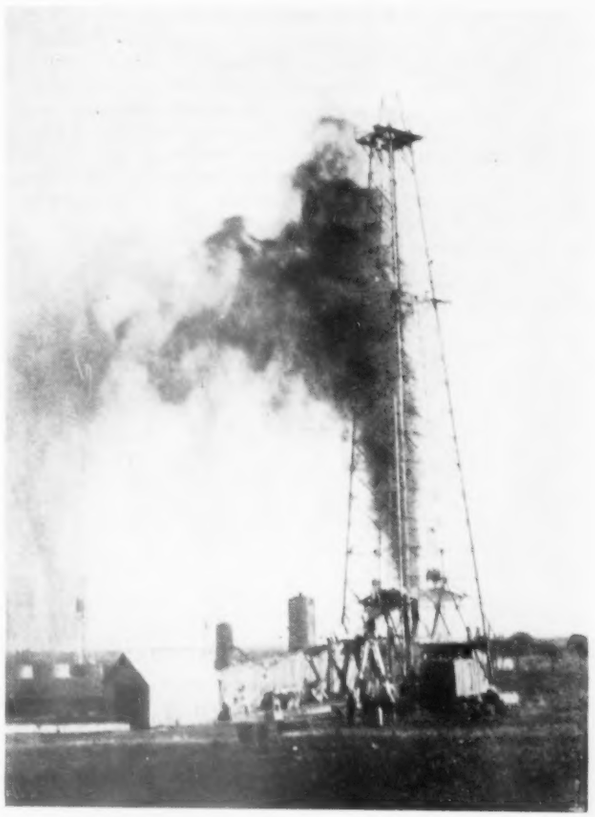
To Take Potential Gauge

The Oklahoma City field should easily be the attraction for oil men during this week, when all wells in the field will be opened up for a potential gauge, which is expected to establish a peak recovery for the field, the height of which depends largely on the amount of crude the lines are able to handle. Operators are also awaiting the opening of the Thomas-Fuzzell producer.

With expiration of the second four-day period operators are pleased with the Slick system of proration, which calls for the complete shutting in of half of the wells for four days, during which time the other half produce open, after which the method is reversed on the various wells. Some of the wells have not been able to flow entirely open due to insufficient facilities for taking care of the oil.

There are a large number of tests due for completion, several of which should get in some time this week. Most important of these is the Mid-Kansas Oil & Gas Company's Browning 1, SWc NW Section 18-11-2w, slightly to the northeast of production. This test is running unusually high and a big producer is anticipated. A piece of loose cement plug is giving it much trouble and prevented its completion last week.

The water record for the field, long held by the Sinclair Oil & Gas Company's Stamper 1, Section 30-11-2w, has been beaten by the Indian Territory Illuminating Oil Company and Foster Petroleum Company's S. Bodine 1, on an adjoining lease. This well made more than 6000 barrels of water along with 3250 barrels of oil.



Above is the largest well brought in in the Oklahoma City field, Indian Territory Illuminating Oil Company-Foster Petroleum Company's Thomas Fuzzell 1. It was estimated as capable of producing 2000 barrels per hour

Proration Gauge Plan Changed At East Earlsboro by Umpire

TULSA.—Mid-Continent Petroleum Corporation's McDaniels 1, SE SW Section 7-9-6, midway between the southeast and the northeast extensions to the Earlsboro pool, came in as a producer last week. It swabbed 540 barrels the first 18 hours from the Wilcox sand, drilled to 4287 feet. After shooting with 10 quarts it had 300 feet of water in the hole and its production dropped off slightly.

Prairie Oil & Gas Company's Wisner 1, SE NE NW Section 18-9-6, in the East or Southeast Earlsboro pool, yielded 140 barrels of oil during the last potential gauge and later did 135 barrels of oil and 130 barrels of water. It was completed the middle of September for an initial of 2170 barrels.

On the west edge of the East Earlsboro pool, the Gypsy Oil Company and Devonian Oil Company are getting another well on their Payne lease. It is No. 7, NE SE SE Section 18-9-6, which swabbed 330 barrels in 24 hours from the Wilcox sand at 4225 feet.

To the northeast, Sinclair Oil & Gas Company's Nichols 2, NWc NE Section 19-9-6, got the Wilcox sand from 4192-4201 feet for a show of oil and gas and is shut down for proration.

Due to mechanical difficulties that result when wells in the East Earlsboro field are opened up for potential gauges, Ray M. Collins, umpire, has announced that hereafter the potential gauge of the field will be taken on the fifteenth and sixteenth of each month. The practice has been to have the wells open up on Sunday, but it required additional back pressure to get the wells back on proration and often they had exceeded their allowed output before getting back into line.

St. Louis Area

The Darby Petroleum Company's Floyd 1, NW SW SE Section 22-7-4, in the west extension to the St. Louis pool, Pottawatomie County, Oklahoma, topped the Simpson sand at 4263 feet and while drilling at 4266 feet filled up with water.

The Darby Petroleum Company's Billington 4, SW NE NW Section 22-7-4, did 55 barrels per hour from the Simpson sand at 4265-75 feet. Since the producing horizons at St. Louis are showing drainage of pressure the Darby well is among the better producers there in some time.

Empire Oil & Refining Company's McKoewn 1, SW NW Section 25-8-4, north of the Kelly extension to the St. Louis pool, had the Wilcox sand from 4504-11 feet, with a hole full of water and is being abandoned.

E. L. Harris' Harjoche 1, SE NE SE Section 8-6-6, in the Vamoosa area of southern Seminole County, plugged back to 4052 feet in the Wilcox sand to 2950 feet, where it ripped the pipe and filled up 1800 feet with oil and water.

Kansas Agreed on Conservation; Divided on Method

TULSA.—At a prolonged conference here November 5, Kansas oil operators showed themselves to be in accord with a general conservative development of the oil resources of the state; however, they were not exactly in harmony with the method of achieving this goal.

The Voshel pool of McPherson County, Central Kansas, will in all probability soon be prorated 50 per cent., as is being done in the Wright-Valley Center field of Sedgwick County and in the Ritz field of McPherson County. The Greenwich-Lygrisse pool of eastern Sedgwick County is being prorated voluntarily by owners there.

The meeting was adjourned without definite results in regard to the Voshel area and a few minor details remain to be ironed out. The obstacles are the protecting of the discovery rights and a proposal not to do any drilling of offsets until 1930. Operators held the meeting to talk the matter over with their neighbor operators to see if some agreeable and satisfactory program could be reached.

Rush Greenslade, vice president and counsel of the Gypsy Oil Company at Tulsa, proposed that the Voshel area be divided into two parts, the north and south. The territory surrounding the new discovery of Slick, Pryor and Lockhart would comprise the north area and the district comprising the Voshel pool proper opened by the Derby Oil Company would be the south region. Both were to be prorated 50 per cent.

The consensus of the meeting was that the Ritz area of McPherson County had been prorated and was being prorated at the present time through the use of back pressure on the wells. In order to cooperate with other areas in Kansas it was agreed that effective November 6, 1929, and until January 1, 1930, that the Ritz pool would be prorated 50 per cent., with the potential production to be determined by the output of the wells from October 26 to November 5, inclusive.

It was also agreed that no additional wells would be started until December 6, 1929, and that if any of the tests now drilling were completed between November 6, 1929, and January 1, 1930, that they would be prorated 50 per cent. of the average daily output for the first five days gauge.

Operators in the Ritz district will meet again December 6 to determine the advisability of further extending the conservation agreement.

Le Flore County

Tulsa—Red Bank Oil Company's Fee 1, SEc SW NW Section 23-9-24e, in Le Flore County, extreme Eastern Oklahoma, which 10 days ago found 35,000,000 feet of gas at 5400 feet, has been destroyed by fire, which has not been put out by steam. The tools were blown up in the hole when the gas was penetrated and in trying to dislodge them mechanical friction ignited the gas. Two of the crew were painfully, but not seriously, burned.

New Western Kansas Pool Opened By Continental

Tulsa. — The first swabbing test by the Continental Oil Company of its new discovery well in Ness County, Western Kansas, has showed it to be of commercial value and a new Western Kansas pool has been opened as a result. It is the first production in the county.

The well is Continental Oil Company's Moses-Aldrich 1, NEc SW Section 7-18-25w, most western producer in the state. It swabbed 220 barrels of 36 gravity oil in 15 hours. Much of this oil was accumulated in the hole before the swabbing was started. The hole refilled, however, at the rate of approximately nine barrels per hour. No water is showing.

There is a long stretch of open hole which will be shut off by lowering the five-inch casing. The producing horizon is the dolomite at 4428-30 feet.

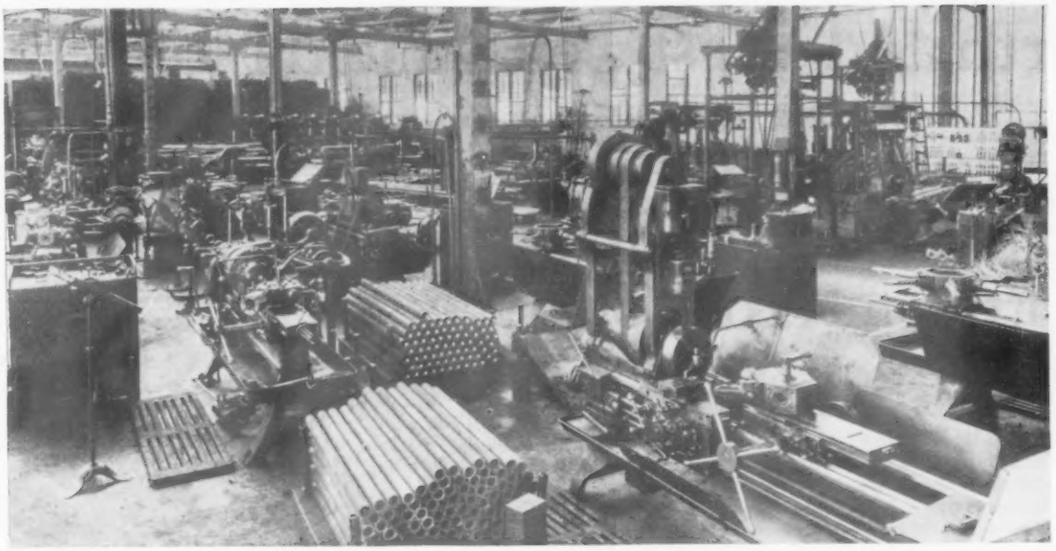
The important wildcat test of the Dixie Oil Company and Amerada Petroleum Corporation on the Olson farm, NW NE Section 10-16-3w, in Saline County, Central Kansas, which had a 20-barrel showing in the Viola lime at 3305-08 feet, found the Wilcox sand at 3490 feet with a hole full of sulphur water. The water is being plugged off and the hole will be plugged back to the Viola lime.

Ritz Well Revived

Shell Petroleum Corporation has succeeded in reviving its original well in the Ritz field of McPherson County. This well had been dead for several months, during which time it had been swabbing 160 to 180 barrels daily, but refused to flow. It commenced flowing again last week and made 1100 barrels in 24 hours. When first drilled in this well made a wild flowing start and earthen dikes were necessary to catch the oil until it could be brought under control.

The third well in the Aladdin pool, in western Butler County, is the Aladdin Petroleum Corporation's Klinger 1, Section 24-27-3e, which made 180 barrels from the Wilcox sand at 2975-2979 feet.

Graham Brothers' Scharr 1, Block 11, Greenwich townsite test in Sedgwick County, surprised operators last week by coming in as a producer. It is offset by two failures. The top of the chat was at 2925 feet and the hole filled with oil in one hour. It is to be put on the pump and is estimated good for 200 barrels daily.



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North and West Texas Field Notes

H. H. KING, *Staff Representative, Fort Worth, Texas*

Another Producing Area Opened In Northern Pecos County

SAN ANGELO.—Wildcat efforts of Cranfill-Reynolds Company and associates on the Masterson ranch in northern Pecos County yielded a new shallow oil producing area during the past week when sandy lime formation was logged at 1249 to 1253 feet, with a hole full of oil resulting when a second horizon was tapped at 1268 feet.

The well was deepened to 1325 feet without scoring a production increase, and swabbed dry, but the indications are favorable for a small pumper as it now stands.

This wildcat is located in the south corner of Section 104, Block 10. It commanded attention several weeks ago when it developed a heavy flow of gas at 1075 feet. Monte Warner and S. B. Owen are part owners, while nearby leases are largely owned by major companies. A series of completions in the Taylor-Link pool within the past week sent this Pecos County area to a new production peak, and the daily output was approximately 10,000 barrels this week from 24 completed wells.

Transportation Less Congested

Leases served by the Humble Pipe Line Company are restricted to 500 barrels daily runs, but since the completion of field storage, the Landreth Production Corporation is relieving the situation somewhat by taking oil for purchase as well as absorbing its own heavy output.

Production of the Landreth Production Corporation in the Taylor-Link pool during the 24-hour period ending 7 a. m. November 11 was at a new peak of 7390 barrels from 11 flowing wells. The company has connected its various leases with the completed 80,000-barrel steel tanks at the field tank farm and pump station, and has accumulated about 30,000 barrels of oil in the first tank. Operation of the eight-inch line from the field to a larger tank farm and car rack near McCamey has been delayed for another week, pending the hooking up of electric power service, although the line was completed on schedule by the National Supply Company, which had a turnkey job on the project.

Landreth Production Corporation and World Oil Company's University 4-B blew in late Saturday flowing 140 barrels oil per hour and five million cubic feet of gas daily from regular lime at 1619-35 feet, and produced 2541 barrels the first day, partly choked.

An air plant, consisting of four units, is to be completed late this week by the Landreth Production Corporation to operate in the Taylor-Link pool, and plans are to flow the wells that offer a high fluid level but have trouble in sanding up, or lack sufficient gas pressure to maintain a regular stream. This is the first air plant for Pecos County, and may lead to other companies making installations.

Efforts of the Independent Oil & Gas Company and Rowan-Tong, incorporated, to work over their discovery well of the Rowan-Tong pool has resulted in the well drilling into sulphur water at 1645-46 feet. It was recently shot after going dead as a pumper at 1605-12 feet, and tools were lost in the hole. The crew successfully drilled by them but in making the new hole failed to bring back the oil and gas production. These interests' McDonald 2, a south offset to the above discovery well, missed the expected oil horizon, and late last week was shut down for repairs at 1645 feet.

The one-sixth royalty demanded by the University of Texas in selling leases in Ector, Pecos and Crane Counties by the sealed bid method November 7 failed to keep companies and operators from making attractive offers, although the one-eighth royalty generally prevails in interior fields of Texas. A wide range of price offers were made by the bidders, with the Cosden Oil Company topping the list in bidding $56,800, plus the first year rental of $80.00, for five-sixths of the minerals under the S½ of NE¼ Section 1, Block 35, and a similar price for the S½ of NE¼ Section 2, Block 35. Both of these 80-acre tracts are in Ector County, and between production. Other sales of leases are to be made at frequent intervals by state, including more in the above section of Ector County. Bids on three tracts were rejected.

Restriction of Crude Runs Forces Settles Production Curtailment

BIG SPRING, TEXAS.—Suspension of drilling operations and more rigid production restrictions are to be imposed on companies taking part in the development of the west extension of the Settles field, located on the Howard-Glasscock County line, as a result of pipe line companies cutting down their crude runs. The local market situation has become aggravated by recent completions, and relief did not result from the recent action of the field proration committee in reducing production allowances from 75 to 40 per cent of daily potential gauges of wells. Umpire E. E. Andrews and M. B. Sweeney, Dallas, chairman of the proration advisory committee, have made a study of the conditions and reported to the Texas Railroad Commission, which will take steps to balance current production with available market outlet by calling a meeting of involved operators.

More than a dozen wells have been completed in the 2200-foot lime horizon in the west extension of the Settles field, and at the close of October they registered a combined potential gauge of about 22,000 barrels daily, based on brief pumping tests. This oil ranges from 30 to 32 degrees gravity, and it is the highest gravity crude produced from the deep lime in the district. But the major pipe line companies prefer the lower gravities because of the lower price scale. West Texas gravity scale crude prices apply to this area.

Cosden Pipe Line Company, which is gathering and transporting crude to the Big Spring plants of the Cosden Oil Company and Richardson Refining Company, has endeavored to absorb this rapidly mounting production along with its old connections in the main field, but has lately become literally swamped after having leased all available tankage in the district. Both Humble Pipe Line Company and Shell Pipe Line Company have refused new connections and have made efforts to shake off some of their old customers rather than to pay the higher price scale that the crude earns under their postings. However, the latter is contracted to take care of the Schermerhorn Oil Company, which is the leading producer in the congested area.

Unless the Cosden Pipe Line Company is given assistance in the marketing of the West Settles area production, all operators are confronted with a possible limitation of daily production to about 25 per cent of the potential. Actual pipe line capacity is more than adequate in the field, and facilities are available for the shipping of oil out in tank cars at 10 cents per barrel tar-

iff should buyers in tank car lots become interested.

Maximum daily production from the 2200-foot and 3000-foot lime horizons in the Howard-Glasscock County district is 37,500 barrels daily under the terms of the commission's proration order, and during October 131 wells produced 910,370 barrels total, or an average of 29,367 barrels daily. This compares with an average of 27,784 barrels daily for September. Production is 800 barrels below the allowance assigned the deep horizons. Seat of trouble is that purchasers are not taking the volume of oil that was agreed to when the commission made the last revision in its rules.

Crude yield from the deep horizons in the field up to the close of October was placed at 12,678,318 barrels, according to Umpire Andrews, with a few wells in the 2500-foot lime omitted from proration restrictions at the close of September.

Third Well Extends World's Deepest Producing Area

San Angelo, Texas.—The deepest oil and gas producing horizon in the world uncovered late last November in the Big Lake field has scored three successful completions without a failure or a junked hole, and is now considered proven over an area of several hundred acres. Big Lake Oil Company's University 4-C encountered production unexpectedly early Friday morning at 8220 feet, making gas with a spray of oil after lodging tools a short distance off bottom. This well flowed 230 barrels of high gravity oil during first 18 hours, and gauged 327 barrels of oil and about six million cubic feet of wet gas November 10. University 3-C, which encountered oil and gas production at 8375-79 feet October 11, experienced a similar fate in having tools to lodge in the open hole, and has been trying to recover tools and line for a month. The latter was killed temporarily with water to try to fish out the junk, but this failed to kill the flow, and Saturday 80 sacks of baroid were used.

Big Lake Oil Company's University 1-C was drilling in black shale November 10 at 7100 feet, and University 2-C was making good progress in lime formation at 7475 feet. Group One Oil Corporation's University 1-B, which uncovered the record depth horizon late in November, 1928, is averaging about 2800 barrels daily of 56 gravity oil and about 25½ million cubic feet of gas from sandy-lime at 8500-23 feet, although it started off with a very small flow of oil and gas. The latter's University 2-B has cemented 20-inch casing at 67 feet, and University 3-B cemented a string of the same sized pipe at 104 feet. Both are to be drilled with rotary by Loffland Brothers, Tulsa contractors, on a footage cost basis. The pioneer well in the deep horizon has not registered usual oil and gas gains since the second well in the field scored production.

CRUDE RECOVERY IN HOWARD-GLASSCOCK DISTRICT

Company—	Total runs 13¼ Months	Number of Wells	October Production	Total Production
Amerada Petroleum Corporation	731,541	8	48,099	779,640
American Maracaibo Company	945,926	8	23,927	969,853
California Company	181,858	2	27,656	209,514
Cosden Oil Company	342,318	6	7,360	349,678
Cranfill Reynolds Company	36,558	1	5,585	42,143
Continental Oil Company	840,247	12	92,827	933,074
Howard County Oil Corporation	234,604	2	46,710	281,314
Humble Oil & Refining Company	143,023	3	27,749	170,772
Kirby Petroleum Company	2,092	2	8,846	10,938
Louisiana Oil & Refining Corporation	257,461	2	11,982	269,443
Lyons Oil & Refining Company	11,343	1	10,263	21,606
Magnolia Petroleum Company	1,267,841	15	51,741	1,319,582
Merrick & Bristow Company	807,823	4	32,379	841,202
Moody (Superior) Corporation	1,481,381	21	106,430	1,578,716
Owen-Sloan & Cosden	1,303,572	7	65,456	1,369,028
Plymouth Oil Company	350,338	4	63,395	413,753
Pure Oil Company	1,446	1	1,161	2,607
Schermerhorn Oil Company	1,056,658	11	108,658	1,165,316
Shell Petroleum Corporation	242,174	5	36,937	279,111
E. L. Smith Oil Company	.....	1	816	816
Sprague Oil Company	217,859	3	4,761	222,620
Sun Oil Company	826,307	5	74,076	900,381
Taylor-Link Oil Company	62,872	2	4,328	67,200
Ward Oil Company	279,183	3	36,552	315,735
Witherspoon & Glasscock Company	112,635	2	12,667	125,302
Total	11,737,060	131	910,370	12,678,318

Expect Quick Drilling on Three Offsets to Van Discovery

FORT WORTH.—The spudding of two direct and one diagonal offset to the discovery well of the Van pool in the Central East Texas district began early this week. Two of these are located on the Shell Petroleum Corporation's Tunnell 25½-acre lease, and the third one is on Pure Oil Company's Thompson lease.

These operations are being conducted by the Pure Oil Company on a unit plan basis, although final papers have not been signed and delivered to make the unitization of this area unanimous. The Texas Company is reported to have delayed the signing up of all lease owners participating in the pool, owing to papers having to be approved by its New York office.

Rotary drilling contracts were awarded last week to Carl Short, Dallas, contractor, and Bass & Dillard of Wichita Falls for the immediate drilling of the three offsets to the discovery well of the Van pool. The steel derricks were erected several weeks ago by the Pure Oil Company when the unit plan of operation in the area became almost assured.

Drilling Eeasy

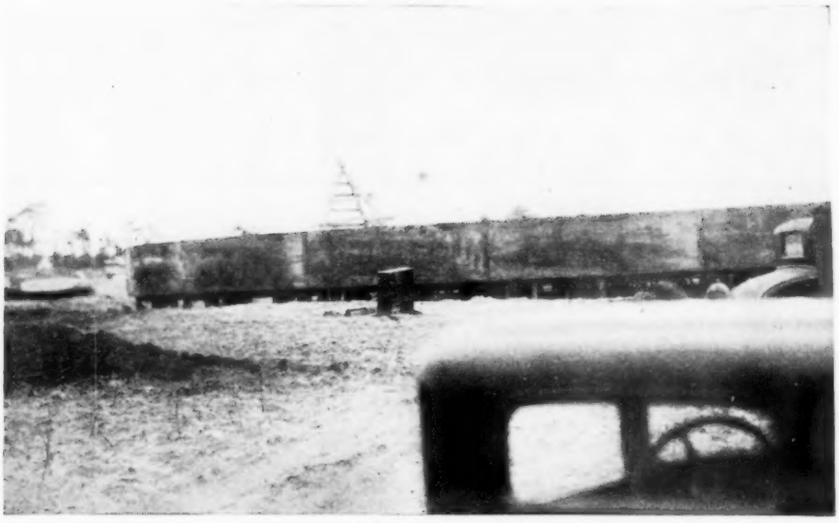
Fast time can be made in drilling these tests to the Woodbine sand horizon, which was encountered at 2610-2710 feet in Pure Oil Company's Jarman 1. The absence of a normal thickness of Austin chalk formation permits faster drilling progress than in other Woodbine sand areas, but this popular marker will be greatly missed by geologists in determining whether tests are running high or low on structure. Paleontology must be applied in this field, and the Pure Oil Company has transferred a staff of paleontologists to check samples when the first three tests reach an interesting depth.

L. E. Lewis, who was formerly in charge of West Texas field operations for the Simms Oil Company, has been engaged by the Pure Oil Company to become drilling and production superintendent of the unit operations in the Van area, and is now organizing his staff of field men.

Having completed the first of a pair of 55,000-barrel steel tanks to be used for field storage on the H. A. Horsely Survey, located west of the producer, the Pure Oil Company was expected to start emptying early this week some of the filled flow tanks at the well by pumping the oil through an eight-inch gathering line. A 19½-mile 10-inch line is to be built from the Horsely Survey tank farm to a 70-car capacity rack on the Cotton Belt railway at Chandler, and a 13-cent per 100 pounds freight rate has been granted on all crude originating at the latter point to the Pure Oil Company's 20,000-barrel capacity cracking and skimming plant at Smiths Bluff, near Beaumont. However, the 10-inch line to the rack is to be used later as the first unit in a direct trunk line to the Gulf Coast by the Pure Oil Company should the field fulfill expectations on crude recovery.

Play Spreads to Smith County

A 1500-acre drilling block to the east of the Van pool and in Smith County is being explored by J. S. Kimbrough and Van McPhail, Fort Worth operators, who have organized the East Texas Petroleum Corporation, with a capital stock of $200,000. Drilling was started middle of last week on the Kadane 259-acre tract, John McFadden Survey, A-624, and at last reports the test was drilling below 500 feet. The T. G. Shaw interests of Fort Worth have a drilling obligation on a 1000-acre block directly south of the Pure Oil Com-



First ring on the first 55 at Van, being erected by Pure Oil Company

pany's Van pool leasehold and a tentative location has been staked in the northwest corner of the south 80-acre of the Mrs. S. C. Huddle 160-acre farm, J. Evans Survey.

In the Richland field area, Navarro County, Haskell and associates' test on the J. N. Morrow farm is preparing to set casing and test sand at a total depth of 3206 feet with prospects of a small oil producer without deepening. This test showed gas at 3190-94 feet, and oil at 3205-06 feet. A drill stem test last week registered four forbles of oil, with no water in evidence. This is a deeper horizon for the field.

C. F. Lytle's second deep test on the J. L. Thompson land, located on the west edge of the Mexia field, is drilling cement plug after setting casing on a good show of oil encountered at 4320-45 feet. The Hornhill community in Limestone County is to receive another wildcat test, and materials are now being unloaded by Jensen-Baggett and associates to drill to the Woodbine sand horizon on the F. R. Richardson farm, located about one mile south of the town.

Co-operative Drilling Looms for North Texas Area

WICHITA FALLS, Texas.—The launching of a co-operative deep well drilling campaign in Wichita and adjoining counties is now practically assured as result of approximately $450,000 having been subscribed by leading independent oil operators and business men in the district. The Deep Oil Development Company is now in process of organization to be incorporated under the laws of Delaware, with a permit to do business in Texas, and will have a paid in non-assessable capital stock of $1,000,000. All leasing and drilling for deep production will be performed by this concern, with activities extending over Wichita, Wilbarger, Clay, Archer and North Young Counties.

The primary purpose of the Deep Oil Development Company is to drill, or participate in the drilling of a number of deep tests in the above counties. It is also planned to render financial assistance to operators and companies undertaking deep drilling projects in order that unexplored deep horizons may be tested properly. Every effort will be made to place the company on a profitable basis, operations to be conducted as a regularly organized commercial oil company. Should shallow production be uncovered in making deep tests it will be developed. The cities and towns throughout the district are expected to be greatly benefited by the renewed activity in lease and royalty trading that will accompany the exploration of deep horizons, while successful completions would greatly stimulate field work in general. For this reason the business men of the district are lending financial assistance to the project, which was first presented at a luncheon given September 27 by Frank Kell of Wichita Falls.

List of Directors

Subject to ratification at a future meeting of stockholders, the board of directors of the Deep Oil Development Company will include the following: Frank Kell, N. H. Martin, J. J. Perkins, James E. McKanna, John F. O'Donohoe, W. B. Hamilton, John Hirschi, J. I. Staley, W. M. McGregor, L. H. Cullum, J. S. Bridwell and J. T. Harrell, all of Wichita Falls. Supplementing this group, the board will also include two members from Clay, Wilbarger and Archer - Young Counties, and two from Wichita County that are non-residents of Wichita Falls.

Exploration of the deep horizons in the general Wichita Falls district has never been given much attention, even though geologists have contended that formations capable of producing oil are likely to exist. Wichita County's deepest oil duction is in lime at 3400-foot level. while Archer County's deepest wells are even shallower. Wilbarger County has lately been making flowing wells from the 2600-foot sandy lime horizon, while Clay County's deepest commercial production is in lime at 3400-foot level. Wichita County threatened to enter the ranks of counties with deep production when Gulf Production Company's S. B. Burnett 43 swabbed a small volume of high gravity oil after shot of 200 quarts at 3598-3650 feet, with a total depth of 4291 feet, but production was not in commercial quantities. The deepest hole in the county is Howell & Somers' John Hirschi 1, which suspended operations last December after drilling to 5283 feet.

Gray County

Amarillo, Texas.—Gray County's production failed to register the effect of the 20 per cent. slash in production and crude purchases made by The Texas Company, November 1, and averaged 63,550 barrels daily during the past week, representing a 70-barrel gain. The Texas Company's curtailment order also applies to Carson and Hutchinson Counties, but the company is a minor producer and purchaser in the latter two counties. Other companies have not found it necessary to follow the above company's action in trimming down crude acceptances, although Prairie Oil & Gas Company has threatened a 25 per cent. reduction late in November should voluntary shut-down agreements now in effect on a few leases in Gray County be terminated. This places the operators on probation to a certain extent, and they are holding back such wells along with unnecessary drilling, as Prairie Oil & Gas Company is a major crude market outlet for small operators.

Abandon Wildcat

Houston.—Louisiana Land & Exploration Company has abandoned its wildcat test, C. A. Barbour 1, located about three miles west of Morgan City, St. Mary Parish, Louisiana, in shale at 1224 feet, and has made location for another test, L. L. Clarke 1, in the same area. The test that has been abandoned was in Lot 21-15s-12e. Location of the new well is 957 feet south and 439.5 feet west of the southeast corner of Lot 18 in Lot 15-16s-12e.

The drilling in this area is the extent of the present activity of Louisiana Land & Exploration Company, but that company still retains an interest in the 10 South Louisiana domes which it discovered and formerly controlled, but which were turned over to The Texas Company in November, 1928, for development by the latter.

So easy for your Crew to Install

Bettis Protector on cone ready to lower drill pipe to slip rubber over tool joint.

Drill pipe being lowered to push up Protector.

Bettis Protectors can be quickly installed on your derrick floor, the only equipment required being a special expansion tool.

Some idea of the rapidity with which these Protectors can be installed is indicated by the results of a test made recently at Ventura. A total of 110 Bettis Protectors were installed on 5395 feet of pipe in exactly two hours forty-five minutes, averaging 33 feet per minute.

When installing, each Bettis Protector is smeared on the inside with a thick soap paste, although light engine oil or rotary mud can be used as an alternative. The Protector is then pushed through the cone into the special expander, and the drill pipe fourble is then slowly lowered, the pin of the tool joint coming down into the cone. Weight of the drill pipe forces the cone through the expander and pushes the Protector over the tool joint onto the drill pipe.

If the Protector is to be slid up to the collar the drill pipe is lowered full length into the expander so that there will be room enough for the tongs between the tool joint and Protector.

To slide the Protector up to any desired position on the pipe, the tongs are used, resting on the rotary table.

Installations are made in two runs on fourbles and three runs on tribles.

Drill pipe being removed from expansion tool with Protector on.

Running in drill pipe, with Protector in place, near collar.

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Perfect Pipe Protection

The drill pipe can never contact the casing; nor can the tool joints or collars. The original tool marks on the tool joints will remain. Bettis Protectors prevent premature fatigue of drill pipe; minimize vibration; reduce the number of twistoffs and fishing jobs; assure faster drilling; reduce the "wear and tear" of all drilling equipment; drill straighter hole by serving as guides for the pipe; make possible the drilling of extra deep wells.

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Bettis Protectors

Gulf Coast Field Developments

JACK LOGAN, *Staff Representative, Houston, Texas*

Evangeline Deep Test Is Abandoned in Shale

Houston. — Yount-Lee Oil Company's Crowley Oil & Mineral Company 4, located on the southeast flank of the Evangeline, Louisiana, field, and distinguished as the second deepest test ever drilled in the Gulf Coast region, has been abandoned at 8145 feet, with the bottom of the hole in heaving shale. Having failed to obtain favorable showings at greater depths, a test was made at 7470 feet, and it showed salt water.

This well has had considerable attention, not only because of its great depth, but also because it is located along the same flank of the field as Yount-Lee Oil Company's Houssiere-Latrielle 6, a producer at 7290 feet—the deepest oil well in the Gulf Coast area. That well was completed June 1, 1929, flowing 5000 barrels of 30 gravity pipe line oil daily, and it is now flowing 1200 barrels daily, almost six months after completion.

Crowley Oil & Mineral Company 4, the test which has been abandoned, had 7⅝-inch casing set at 7050 feet, and 5-3/16-inch casing was set around 7550 feet. It lacked only a few feet of establishing a new record depth in the Gulf Coast, the record being held now by Yount-Lee Oil Company's Chambers County Agricultural Association 4 at Barbers Hill, Texas, abandoned in heaving shale at 8150 feet.

Yount-Lee Oil Company is drilling two other tests now at Evangeline. Its Houssiere-Latrielle 7 has set seven-inch casing at 7100 feet, and is waiting for cement to set, and Y. L. Simms' Fee 1 is drilling hard sand at 3925 feet. Other operations in the Evangeline field include Charles P. Seiss' Abshire 1, rigging up; The Texas Company's Rayne Heirs 5, drilling hard sand at 4900 feet; and Jennings Petroleum Company's Heywood 3, rigging up.

Standard Gets Producer On Bayou Blue Dome

Houston. — Standard Oil Company of Louisiana has finished Schwing 2 as the second oil producer of Bayou Blue dome, Iberville Parish, Louisiana. It came in flowing 1500 barrels of fluid, 75 per cent. water, with two joints of screen set at 3600 feet. The production tests 25 degrees Beaume gravity. The well is located 950 feet north and 313 feet west of the southeast corner of the southwest quarter of Section 74-9s-10e.

This is the sixth test completed on Bayou Blue dome, following its discovery by seismograph in 1926. The discovery well there was Standard Oil Company's Wilbert 3, located in Section 74; it came in the latter part of September, 1929, flowing 15 barrels 19 gravity crude daily from 1925 feet.

One of the tests drilled at Bayou Blue was by Union Sulphur Company, but all others have been by Standard Oil Company of Louisiana. That company is preparing derrick foundation for Wilbert 3 now, and has locations made for Wilbert 4 and Wilbert 5.

Vermilion Parish

Houston.—Atlantic Oil Producing Company has abandoned its wildcat test Alfred Boudoin 1, which is located in the vicinity of Abbeville, Vermilion Parish, Louisiana, in Section 68-12s-3e. The drill was stopped at 5015 feet in sticky shale.

Yount-Lee Quits Anse La Butte Well in Salt

Houston.—Yount-Lee Oil Company has abandoned Louisiana Petroleum Company 5 at Anse la Butte, St. Martin Parish, Louisiana, in salt at 5425 feet. This well attracted considerable attention the early part of August, 1929, when it came in a flowing well at 3765 feet. However, it quit flowing after 12 hours. It was then deepened. It is on the northeast flank of the dome.

Gulf Exports of Sun

Beaumont, Texas. — Coastwise water shipments of crude oil by the Sun Oil Company from its deep water terminals at Sun and Sabine Pass during October amounted to 825,995 barrels. Those crude terminals are located along the Neches-Sabine channel in the Beaumont-Port Arthur district of Texas.

Coyle-Concord Will Drill Test in Colorado County

Houston. — Coyle-Concord Oil Company, headquarters of which is in San Antonio, has made location for its second wildcat test in southwestern Colorado County, an earlier test, Coyle 1, having been abandoned in shale around 1335 feet a short time ago.

The new test will be No. 1 on the Nelson 648 acres in Section 43, I.&G.N. Survey. This area is approximately eight miles west of the town of Garwood, which is situated on the Colorado River, and about 10 miles south (a little west) of Rock Island. The first test drilled by this concern, Coyle 1, was slightly north of the location for the second wildcat, having been located in Section 42, same survey.

Colorado County has no oil production, nor does it have any geophysically discovered salt dome prospects, being slightly north of the northern limits of the regular salt dome country; but it has more or less favorable possibilities of production from areas characterized by structural conditions. At any rate, there has been considerable exploratory work in various parts of the county. Humble Oil & Refining Company has for the past year or so been engaged in drilling core tests in the vicinity of Altair, central Colorado County, while Shell Petroleum Corporation in recent months has made some core tests in the central eastern part of the county, about eight miles east of Columbus.

Although, as stated above, Colorado County is not in the regular salt dome country, its southern portions are as near the Gulf Coast as San Felipe and Hockley salt domes, neither of which, as yet, has produced oil commercially, and the Orchard or Moore's dome, northern Fort Bend County, is only slightly to the south. Raccoon Bend, a producing field, but probably not a salt dome, located in Austin County, is as far inland as the northern part of Colorado County.

525 Barrels Initial Oil Yielded At Sugarland

Houston. — During the past week there were two completions at Sugarland, Fort Bend County, a field operated solely by Humble Oil & Refining Company. Brazos Farms 8 came in for 450 barrels at 3675 feet, and Hagenson 1 was finished as a 75-barrel oil pumper at 3811 feet, making also 50 per cent water.

Average daily production of this field for the past week was 11,650 barrels.

Drilling operations of the Humble Oil & Refining Company there now include the following tests: Camp 9 drilling at 875 feet; Hamner Fee 8 reaming at 1214 feet; Nelson 7 waiting on cement to set around casing at 1200 feet; Peterson 1 reaming at 3736 feet; Sugarland Industries 11 rigging up; and Sugarland Industries B-1 drilling sand and shale at 3596 feet.

Moore's Field Deep Test Reaches 6600 Feet

Houston.—Gulf Production Company is now drilling the deepest test which has been put down at Moore's Field (Orchard), Fort Bend County. It is Moore 19, located on the north side of the dome. That test is down 6600 feet in heaving shale.

Moore's Field was one of the earliest geophysical discoveries of the Gulf Coast, having been found by seismography in 1924. Among the 19 tests drilled in this field five have been producers, the deepest around 4000 feet.

Three Wells Completed At Old Hackberry Dome

Houston.—Three oil producers were completed during the past week at Old Hackberry dome, Cameron Parish, Louisiana. Rycade Oil Corporation and Humble Oil & Refining Company, operating jointly, finished Gulf Land 2, a workover well on the west flank of the dome, at 4325 feet. The well came in flowing by heads at the rate of 600 barrels daily, producing 20.5 gravity crude. One joint of screen was set in the sand. While Old Hackberry is now producing over 3000 barrels daily, this Rycade-Humble well is of particular interest inasmuch as it is located on the west side of the field, whereas nearly all the production is from the south and southeast and east flanks.

Yount-Lee Oil Company's Lacy 3, located along the east flank of the dome in Section 27-12s-10w, came in flowing 1000 barrels of 21 gravity crude daily through a half-inch choke, with one joint of screen set at 3295 feet total depth. The other new well is Sunshine Oil Corporation's Porter Ellender 5, also in Section 27. It came in flowing 350 barrels daily through a one-inch opening when a joint of screen was set in sand at 3212-25 feet.

J. G. Sutton's Francois Duhon 1, a test in Section 22 at Old Hackberry is now drilling gumbo at 1785 feet. Yount-Lee Oil Company's Carter & Sweeney 2 in Section 22 is drilling water sand at 3402 feet, and that company's Lacy B-2, Section 22, has set seven-inch casing at 3250 feet.

At East Hackberry, a dome located several miles east of Old Hackberry, there are two operations now, both by Calcasieu Oil Company. Its Valery 8 is drilling shale and lime at 2650 feet, and Caldwell 4 is drilling sand at 4375 feet. The same company's Lemke 5 is a derrick. Production at East Hackberry is now around 2500 barrels.

Refugio

Houston. — Refugio, which joined the rank of oil producing fields only in the summer of 1928, although it had been a gas field for several years before then, now has over 60 oil wells. A survey made last week showed 57 oil wells on production, with a combined daily yield of approximately 15,000 barrels. Since then there have been five completions in the field, including three oil wells and two gas producers. With approximately 35 rigs running there, Refugio is now the most active field in the Gulf Coast territory.

Houston Gulf Gas Company early this week completed Shelly 8 for 300 barrels pipe line oil daily through a one-quarter-inch choke, and finished Fannie Heard 8 as a gas well with 1150 pounds rock pressure at 3685 feet. Mission Drilling Company's J. F. B. Heard 1 was also completed as a large gas well, with 1200 pounds rock pressure, at 3410 feet. Both the Houston Gulf Gas Company and Mission Drilling Company are subsidiaries of the United Gas Company, and together they have about a dozen rigs running at Refugio, being therefore the largest interests operating there.

Another recent completion in the field was Dr. Hewitt's Cemetery 2, which came in flowing 250 barrels pipe line oil daily through a 3/16-inch choke at 3679 feet. Sun Oil Company completed Leisering 2 for 300 barrels initial through a 3/16-inch choke at 3703 feet total depth.

Houston Oil Company's Pratt-Hewitt-Rooke 10, a workover, completed originally as a gas well, reset screen at 3703 feet, and came in flowing 100 barrels of oil daily.

Jefferson County

Houston.—Vacuum Oil Company has abandoned its wildcat test, Broussard & Hebert 1, located on the La Belle torsion balance prospect of the company in southern Jefferson County, about nine miles southeast of Fannett. The test was abandoned in shale at 5673 feet. Favorable indications were noted there this year, and this was the first test drilled there. Location of the well was in Section 208, T. & N. O. Survey. No important showings were reported in the test.

Pure Oil Recovering 475 Barrels At Lost Lake

Houston.—Pure Oil Company's daily production at Lost Lake, new Chambers County field, is now around 475 barrels, from two wells. Mayes 3 is producing 325 barrels daily and Mayes 2 approximately 150 barrels.

During the past week some oil was obtained from a new well, Mayes 5, but it is now being worked over. When screen was set in this well at 2793 feet it showed gas and a little oil, with 400 pounds pressure. The well would not flow satisfactorily, however, and screen is now being pulled for the purpose of resetting or else drilling deeper.

Pure Oil Company's Mayes 1, a workover, is swabbing at 2852 feet total depth; Mayes 4 is drilling at 2817 feet; Mayes 6-A, located 500 feet south of Mayes 6, which has been temporarily abandoned, will be drilled immediately, and material is being moved in; Mayes 7 is drilling gumbo at 2316 feet; Mayes 8 is drilling gumbo at 2075 feet; and Lost Lake 3 is in sand and shale at 3962 feet.

South Casper Creek Field Extended By Producer

Casper, Wyoming.—A material extension to the South Casper Creek field was brought about last week by the Fargo-Western Oil Company, which has a 200-barrel well in the Tensleep sand at 2542 feet on Section 2-33-83, Natrona County. The new well adjoins the Poison Spider field on the west and proves new territory three miles by one mile in dimension.

Heaving Shale Puts Stop To Long Point Test

Houston.—Gulf Production Company's Trone 12, located on the north side of the Long Point dome, Fort Bend County, has been abandoned in heaving shale at 6250 feet. That was the deepest test ever drilled at Long Point, the deepest hole previously drilled having been around 4000 feet.

Long Point is among the earliest salt domes of the Gulf Coast revealed through geophysics, having been found in 1924 by torsion balance. Gulf Production Company practically controls the dome and has drilled about 60 tests there, most of them around 1000 feet deep and located toward the top of the dome, which rises within about 600 feet of the surface. However, a dozen tests, approximately, have been drilled to depth ranging from 2000 to 4000 feet around the edges of the field.

The only oil producer completed at Long Point was Gulf Production Company's L. Wolf 13, completed as the discovery well of the dome December 16, 1928; it pumped 100 barrels, 50 per cent. b.s. and water, daily at 596 feet. It was deepened later, however, and was finally abandoned in gyp at 665 feet.

Black Bayou

Houston.—On the southwest side of Black Bayou dome, Cameron Parish, Louisiana, Shell Petroleum Corporation has abandoned Watkins 13 at 1250 feet in lime. This salt dome was discovered by seismograph in 1927, and all drilling on it has been by Shell Petroleum Corporation on the Watkins estate. The test that has just been abandoned was the thirteenth started, but the twelfth finished. Watkins 12 has set 9⅝-inch casing at 5210 feet and is waiting on cement to set. Watkins 6, located on the northeast flank of the dome, formerly a flowing well at 4727 feet, is preparing to test at 4875 feet.

While Watkins 6 produced some 28 gravity crude at 4727 feet, there have also been two other producing wells completed at Black Bayou, both on the southwest side of the dome, giving up heavy oil, about 19 gravity, from around 975 feet.

Tidal Offices Moved

Tulsa.—Tidal Oil Company and Tidal Refining Company will shortly move their offices to the fifth and sixth floors of the Philcade Building, Tulsa. The move will probably be made around the first of the year, when the new Philcade Building should be completed.

Operators Move

Fort Worth, Texas.—H. F. Gibson and F. Kirk Johnson, partnership operators who are engaged in the drilling of a half dozen wildcats in the West Texas district, have moved their headquarters from Abilene to the W. T. Waggoner building, Fort Worth. These operators discovered the Leck-Daugherty pool, located in north Winkler County, Texas, in May, 1928.

Louisiana-Arkansas Field Notes

Dixie Extension Attempts Fail; Production Drops

SHREVEPORT.—Three dry holes in as many directions in edge tests in the Dixie district of Caddo Parish, Louisiana, a dry test with a small show of oil in a well a mile north and east of production, with one lone producer, a 75-barrel pumper on the north edge, gave that area a rather severe reverse during the last week. Daily production continued to drop steadily in Dixie field.

Zwolle district of Sabine Parish, Louisiana, furnished the most optimistic development of the week when R. L. Gay, Trustee, cored one foot of a rich oil sand from 2404 to 2405 feet in Bowman-Hicks A-1, Section 34-8-12, 12 miles east and slightly north of his three producers in Section 14-7-14. The sand was encountered under a chalk formation, just as has been the case in the three wells to the southwest that are producing 44 gravity oil. The deepest of this trio is 2350 feet. Incidentally, these three wells continue to perform in an interesting fashion. Their combined daily output on November 8 was 452.5 barrels. The latest, Bowman-Hicks 4, completed a month ago for 75 barrels on the beam with 38 barrels of salt water, has now increased its daily oil yield to 200 barrels. The discovery well, Bowman-Hicks 1, 700 feet directly east, which was turned into the tanks last Thanksgiving flowing at the rate of 50 barrels, on the November 8 gauge made 142.5 barrels. Bowman-Hicks 3, completed last May flowing 11 barrels daily is flowing 110 barrels. Both the flowing wells are making their yield through 2½-inch tubing. Should the test 12 miles east be a producer activity would shift to that region.

R. W. Norton's Hill 1, Section 33-23-16 in northwest Caddo Parish, Louisiana, adjacent to the Texas and Arkansas state lines, tested salt water with a slight show of oil at 3728 feet with 17 feet of broken sand. Norton is drilling ahead, being near the 3800-foot level.

Magnolia to Test Sand

Magnolia Petroleum Company has successfully set 5¾-inch casing at 6947 feet in McCook and Hibbler 1, Section 22-21-10, Cotton Valley district, Webster Parish, the deepest hole ever drilled in this territory. After drilling out bridges, the 8⅝-inch casing had to be swedged out and was finally pulled. The sand to be tested is believed to be in the lower Trinity, corresponding to the horizon in which Dixie Oil Company last summer obtained 150,000 feet of gas at 6125 feet in Robertshaw 92, Section 13-21-15, Caddo Parish, Pine Island district.

During the week in the Dixie field the D. C. R. Oil Company abandoned Oden 2, NE NW Section 20-19-14, at total depth of 2802 feet as a dry hole. This test was a western offset to the company's Oden 1 in the same section, which was a small producer.

Ray-Dawes Drilling Company's Hunter A-4, NE SW Section 9-19-14, a northern offset to the same company's Hunter A-1, SW SW Section 9-19-14, one of the largest wells of the field and the one that extended production three-quarters of a mile northeast last August, has been put on the beam and is pumping 75 barrels daily from 2438 feet. This well is on the north edge of production.

Standard Oil Company of Louisiana has abandoned as a dry hole School Board 2, NE NW Section 16-19-14, at total depth of 2682 feet. This was an eastern offset to its School Board 1, NW NW Section 16-19-14, also one of the four largest wells of the field, the latter being a 660-foot southern offset to the Hunter A-1 of Ray-Dawes Drilling Company. The School Board 2 was an edge well to the east of this part of the field.

A quarter of a mile northwest of the original discovery well, Hunter 1, NW NW Section 17-19-14 which the D. C. R. Oil Company sold with surrounding acreage to the Standard Oil Company of Louisiana, the latter company has obtained a dry hole in Henderson 3, SE SE Section 7-19-14, at 2457 feet.

Dixie's Production Dropping

A half mile north of S. T. Onyett's Dixson 1, SW SW Section 10-19-14, Adams and Despot tested dry with a small show of oil in Dickson 1, SW NW Section 10-19-14, in 10 feet of broken sand, at total depth of 2445 feet. They are now drilling ahead at 2455 feet.

More than a half mile east and north of this test Fred H. Ryan has set 10-inch casing at 105 feet in Dickson Heirs 1, Section 3-19-14. Standard Oil Company of Louisiana is rigging up for School Board 4 in the northwest quarter of Section 16-19-14 and The Texas Company is building derrick for Sentell 1, Section 9-19-14. On the west side of the field Gulf Refining Company is rigging up Oden 6, SW NE Section 18-19-14.

As an index to the rapidity with which the production in Dixie's larger wells is falling, The Texas Company's Hunter 1, SE SE Section 8-19-14, a western offset at 660 feet to Ray-Dawes' Hunter A-1, is producing but 542 barrels. Its initial yield was 3031 barrels. Gulf Refining Company's Hunter 3, NE NE Section 17-19-14, a southwest offset to the Ray-Dawes Hunter A-1, is yielding about 400 barrels now, after having been completed as a 3300-barrel flowing well. Standard Oil Company's School Board 1, NW NW Section 16-19-14 is down to around 450 barrels after having been originally close to 2600 barrels capacity.

Bridges-Clark Oil Company's Williams 2, Section 33-10-12, Sabine Parish, Pleasant Hill district, was completed during the week at total depth of 3224 feet flowing 487 barrels daily. It is an offset to the company's Williams 1 in the same section completed last summer as a 2000-barrel producer, the largest in that district.

Wildcat Locations

Three wildcat locations were included in the 10 announced in South Arkansas. E. L. Chapman has made location for Thompson 1, NW NW Section 4-17-15, Union County, while east of Champagnolle, also in Union County, Marine Oil Company is rigging up Thompson A-3, Section 10-18-13. A mile northeast of the small producers in the Mount Holly district of Ouachita County, Artex Oil Company has made location for Smith 1, SW NW Section 31-15-17.

Smackover during the week added five producers, four in the rejuvenated Nacatosh sand. The largest was Sinclair Oil & Gas Company's Berry 11, Section 33-15-15, Ouachita County, which is pumping 185 barrels daily from perforation of casing in the old test at 2017 feet.

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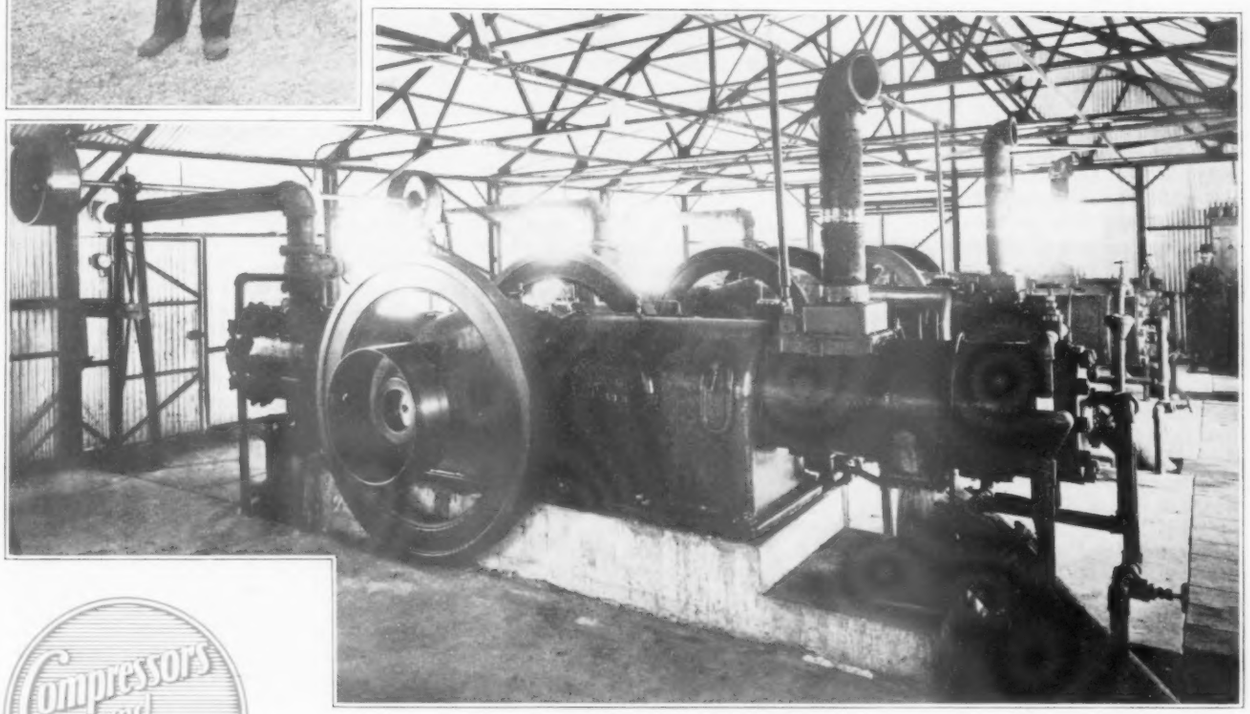

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Association Speakers *Urge* Unit Operation

Edward T. Moore named president Texas Division of the Mid-Continent Oil & Gas Association at meeting in San Angelo

By H. H. KING
Staff Representative

SAN ANGELO, Texas.—The unit plan of developing flush oil producing areas was strongly advocated by the principal speakers on the business program given in conjunction with the eleventh annual meeting of the Texas division of the Mid-Continent Oil & Gas Association held here November 8. This annual gathering of leaders of the oil industry in Texas was well attended by operators and officials of companies from other sections of the state.

Edward T. Moore, president of the Simms Oil Company, Dallas, was elected president of the Texas division, succeeding John F. O'Donohoe, president of the Petroleum Producers Company, Wichita Falls, who served two terms in this capacity. Other officers chosen follow: K. C. Baker, United North & South Development Company, San Antonio; Earl Calloway, Dixon Creek Oil Company, Amarillo; E. H. Eddleman, American Refining Properties, Inc., Wichita Falls; Edgar J. Marston, Texas Pacific Coal & Oil Company, Fort Worth; John R. Suman, Humble Oil & Refining Company, Houston, and Levi Smith, Big Lake Oil Company, Texon, all vice-presidents; W. M. Massie, Fort Worth, treasurer, and Joe P. Laney, Dallas, secretary.

E. B. Reeser, president of the American Petroleum Institute, and W. N. Davis, Bartlesville, Oklahoma, president of the general Mid-Continent Oil & Gas Association, were the honor guests at the Texas division meeting, and both spoke on the merits of unit operation in flush fields.

The oil industry throughout the United States is at this time operating under the greatest cooperative curtailment program ever known and has thus, temporarily at least, saved itself from ruin, according to Mr. Reeser. While such voluntary curtailment plans should be highly commended, they are only temporary expedients, subject at any moment to the selfish motives, or misunderstandings of one or more operators in each field. Mr. Reeser stated that the industry should not rely on expedients of this kind, but must develop a conservative plan that will be legal, permanent and economically sound, with the unit plan of operation offering the greatest opportunity for curing many of the evils that accompany the development of flush fields.

Regents Antagonizing Stability

Touching on local problems confronting the West Texas operators, Mr. Reeser stated that the policy of the regents of the University of Texas in selling leases for prospecting purposes under a three-year term is diametrically opposed to conservation and sound, sensible business methods. He pointed out that the Federal government is doing everything it can to defer the development of oil on public lands, while the University is actually demanding greater activity in the development of oil which is not needed at this time. He recommended that the Texas division, as well as individual operators make an effort to induce the regents of the University to issue future leases for a 10-year period, and insert a clause in lease contracts that will encourage operators in any pool, wherein state lands are affected, to unitize such operations.

Davis spoke on the merits of unitization, or merging of separate interests into a common ownership in prolific oil areas, and informed the members of the Texas division that recently the Oklahoma-Kansas division of the Mid-Continent Oil & Gas Association had given its formal approval to such a plan. A committee of lawyers and representatives of the land departments of companies and operators comprising the Oklahoma-Kansas division is now at work to devise a more definite code of practice and universal form, or forms of contract for unitization, according to Davis, and it is hoped that the report of this committee can be presented to the directors of the general association at its meeting the latter part of November. Should a definite program of unitization be adopted by the directors at this meeting it is planned to present the same to the directors of the American Petroleum Institute at the Chicago meeting early in December.

Harry Smith, secretary of the Oklahoma-Kansas division, made a short talk, and informed the gathering that a committee of lawyers and land men had been appointed in his district to formulate definitions on the various phases of unit plan operation, and will soon be in position to answer various questions that operators may care to submit on this subject. A code of ethics has been suggested, and included in this will be the elimination of "top leasing," which is now causing operators to spend large sums of money annually to renew expiring leases. Bert H. Collins, Echo Oil Company, Tulsa, made a short talk on the necessity of unit operation.

J. Edgar Pew, vice-president of the Sun Oil Company, Dallas, and former president of the American Petroleum Institute, made a motion for the appointment of a committee of 10 oil men representing all oil centers in the state to supply information on conservation rules and regulations to operators in their respective territories. This committee would also assist state authorities seeking information on conservation. W. B. Hamilton, Wichita Falls oil producer and president of the West Texas Chamber of Commerce, made a talk on land title matters, and explained the work that his organization was doing to clear up bad titles.

The following were elected to represent the Texas division on the board of directors of the general association: J. F. O'Donohoe, J. D. Collett, Harry Hines, R. A. Crawford, Frank Cullinan, W. H. Francis, Harry Hanszen, T. B. Hoffer, Roy B. Jones, J. L. McMahon, R. R. Penn, J. Edgar Pew, B. S. SoRelle, W. B. Sutton, Herbert O'Bannon, and all of the newly elected officers. The election of the executive committee for the Texas division was left open for the president to nominate at a later date.

Golf and Banquet

The directors of the Texas division during executive session voiced their appreciation of the work and efforts of John O'Donohoe, the retiring president, and his fellow officers, and voted a raise in salary to Joe P. Laney, secretary, who was unable to attend because of a recent serious illness.

A golf tournament was staged at a local country club, but only nine holes were played because of rain. The following were crowned as winners: Ex-Mayor W. D. Holcombe of San Angelo; Harry Maxwell, Sun Oil Company, Dallas, and F. J. Adams, district manager Gulf Production Company, Fort Worth.

The oil division of the San Angelo board of city development was host to the oil men in providing entertainment, and also gave a banquet. J. Edgar Pew presided as toastmaster. Barry Miller, lieutenant governor, was the principal speaker on the evening program.

Economic Problems of Petroleum Differ From Other Industries

By W. N. DAVIS

Before the San Angelo Meeting of the Mid-Continent Oil & Gas Association

IF all the economic troubles of the oil industry do not result from overproduction of crude they at least begin there. I have often heard it said that the oil industry is like any other in its problems of supply and demand and overproduction. I have always maintained and still maintain that this is not true. I know of no other industry producing raw material where an operator is forced to continue his development and production regardless of market conditions and against his better judgment or lose his reserves in the ground to his neighbor. This condition exists in the production of oil because oil pools are common reservoirs, and the oil and gas, not being fixed in place, can be drained from under the various properties through wells drilled on adjoining properties. Thus, each owner in a pool must drill if his neighbor drills, or lose a portion of his oil and gas.

These are simple, elementary facts known to every oil producer, which have been so widely written and talked about that it would seem they must be known to everyone as well as to those who have for some years been interested in bringing about better economic conditions and prevention of waste in the industry. I cite them here to refute the statement that the economic problems of the oil industry are no different from those of any other and as a foundation for what I propose to say about unit ownership and unit development of oil pools.

The necessity for an operator to continue development and production against his better judgment, to which I have referred, obviously arises because of the divided ownership of the acreage of the oil pools. If a single oil pool was owned in its entirety by a single operator, there need be no problem of overproduction, and the business of producing oil would then be comparable to that of mining solid minerals. The operator could carry on in an orderly, intelligent manner, making thorough scientific and technical investigation of the area in order to secure the information essential to the best method of development and production, which would then be adjusted to meet the market demands. This would be the ideal situation, and it exists to a very large extent outside of the United States.

W. N. DAVIS

Economies In Development

The economies in development which result under such conditions are: orderly and, therefore, more efficient development; the location of wells with due regard to structural conditions, thus securing a greater recovery of oil with a minimum use of the gas in production of oil, saving it for its natural market as fuel; this greater recovery coming from fewer wells, perhaps half now drilled in competitive pools; a greatly reduced number of dry holes, the elimination of duplication of machinery and facilities of all kinds, and of overhead expenses. Oil producers in foreign countries, carrying on operations of this kind, can produce oil at a fraction of what it costs to produce it in the United States, can test their potential areas, drill their producing wells, shut them in or control the production thus creating their reserves ready at hand to meet demand from time to time as it may develop. In the United States, with divided ownership of oil pools, no such orderly and economic procedure is possible.

Gradually the industry has awakened to the seriousness of this situation, and a most gratifying spirit of co-operation in

Reeser Urges Unit Plan Adoption Before Texas Producers

IN a speech made before Texas division members of the Mid-Continent Oil & Gas Association in a meeting of that body held recently in San Angelo, E. B. Reeser, president of the American Petroleum Institute, urged consideration and adoption of a unit plan of operation as a means of stabilizing the ratio between supply and demand of crude oil and advocated a change in the state's leasing policy with reference to the exploitation of University lands in West Texas. Extracts from his speech follow:

In 1926, 66 per cent. of the total production of the United States was produced in the territory covered by the Mid-Continent Oil & Gas Association. When the association was organized in 1917, the production of the United States for the year was 335 million barrels; last year the total produced in the Mid-Continent fields was 600 million barrels. This association is a federated concern. It has the general association, which functions on matters of common interest to Kansas, Oklahoma, Texas, Louisiana and Arkansas. At this time it is especially important that Texas, Oklahoma and Kansas work hand in hand with the general association.

As suggested heretofore, 66 per cent. of the nation's production is produced within your borders; whereas, only 12 per cent. of the nation's consumption of gasoline is being used within the same area. These figures should give thought to the economical situation of the members in this group.

There will soon be a meeting of the general board of directors of the association, at which a report should be presented by a committee organized to work out details and formula for the consideration of a model pooling agreement.

Fear Anti-Trust Laws

It will be generally admitted that the Texas division has greater problems to solve than any other division. The area covered by your activities, which at this time include New Mexico, is tremendous. The anti-trust laws of Texas throw fear into the hearts of many when constructive programs are being considered, in fact, state institutions are actually contributing to a condition which, if continued, may bring about a chaotic condition in the industry.

(Continued on page 74)

E. B. REESER

curtailment and proration of production has developed, but these are temporary expedients to ameliorate conditions in emergencies. The only permanent cure is common ownership and unit development of the common reservoir. It will take time, and its beneficial effects will not be immediately felt. It will be a matter of evolution and perhaps can never be fully attained, but the unitization of some of the pools is better than none, and a partial unitization of a pool will permit a measure of control which will be ample reward for efforts expended. I confidently believe that in time, as its great economies and stabilizing influence are more fully realized through experience, it will become the universal practice.

Checkerboard Policy Scored

Something less than a year ago the Kansas-Oklahoma division of the Mid-Continent Oil & Gas Association gave its formal approval to this plan and urged its members to refuse to buy spreads around new drilling projects and to limit their assistance thereto to areas where there had been effected some form of unitization or pooling which would permit control of development in the event production was found. This program has been largely adhered to by most of the principal operators in those two states, and I believe it has been followed to a considerable extent in Texas. However, the immense amount of spread and checkerboard acreage already owned, producing constant chain of expiring leases in areas of divided ownership, has been the source of some exceptions to the rule, made because of real or fancied reciprocal obligations.

At a recent meeting of the directors of the Kansas-Oklahoma division, adherence to this program was reaffirmed, and as president of the general Mid-Continent Oil & Gas Association, I was requested to undertake to promote its more universal adoption and to crystalize and strengthen its application. A committee of lawyers and representatives of land departments is now at work to devise a more definite code of practice and universal form or forms of contract for unitization, and it is hoped that the report of this committee can be presented to the directors of the general Mid-Continent Oil & Gas Association at its annual meeting the latter part of this month. It is also hoped that the action of the directors at that time will be of such character that a definite program for carrying on this policy can be presented to the directors of the American Petroleum Institute at its annual meeting in Chicago, early in December.

The welfare of the producing industry as a whole is essential to the continued prosperity of each individual producing unit, and I wish to urge that everyone turn his attention seriously to the unitization program and lend his fullest efforts and co-operation to its attainment. I hope that the Texas division of the Mid-Continent Oil & Gas Association, appreciating the importance of this movement, will lend to it its wholehearted and enthusiastic support.

Directors Named for Texas Division of Mid-Continent Association

The following is a list of the directors elected for the ensuing year:

F. J. Adams, Gulf Production Company, Fort Worth.
K. C. Baker, United North & South Development Company, San Antonio.
L. E. Barrows, The Texas Company, Fort Worth.
L. J. Black, Beaumont Iron Works, Beaumont.
E. H. Blum, Atlantic Oil Producing Company, Dallas.
J. S. Bridwell, Bridwell Oil Company, Wichita Falls.
E. H. Buckner, Houston Oil Company of Texas, Houston.
C. C. Cartwright, National Supply Company, Fort Worth.
J. M. Charlton, The California Company, Dallas.
Warner Clark, The California Company, Dallas.
W. D. Cline, Cline Oil Company, Wichita Falls.
J. D. Collett, O'Keefe & Collett, Fort Worth.
T. B. Cranfill, Cranfill Brothers Oil Company, Dallas.
R. A. Crawford, Lone Star Gas Company, Dallas.
John Crotty, Republic Supply Company, Houston.
Frank Cullinan, Republic Production Company, Dallas.
F. W. DeWolf, Louisiana Land & Exploration Co., Houston.
Jack Dies, Humble Oil & Refining Company, Houston.
R. L. Dudley, Gulf Publishing Company, Houston.
R. O. Dulaney, Fort Ring Oil & Gas Co., Fort Worth.
E. H. Eddleman, American Properties, Wichita Falls.
F. V. Faulkner, Magnolia Petroleum Company, Dallas.
Chas. Fitzgerald, Pure Oil Pipe Line Company, Dallas.
W. M. Francis, Magnolia Petroleum Company, Dallas.
W. P. Gage, Tridex Corporation, Dallas.
W. B. Hamilton, Wichita Falls.
Harry C. Hanszen, Houston.
Shelden Hardin, Southern Crude Oil Purchasing Company, Fort Worth.
W. M. Harrison, Star Refining & Producing Co., Fort Worth.
R. S. Haseltine, Guiberson Corporation, Dallas.
Harry Hines, Wichita Falls.
T. B. Hoffer, Hoffer Oil Corporation, Fort Worth.
James Hutcheson, Rio Bravo Oil Company, Houston.
W. M. Irish, III, Atlantic Oil Producing Company, Dallas.
Roy B. Jones, Panhandle Refining Co., Wichita Falls.
C. F. Kelsey, Fort Worth.
J. A. Kemp, Wichita Falls.
J. F. Lucey, Lucey Petroleum Company, Dallas.
J. B. McCabe, Municipal Gas Company, Dallas.
Chas. P. McGaha, Fain-McGaha Oil Corporation, Wichita Falls.
Angus McLeod, Shell Petroleum Corporation, Dallas.
J. L. McMahon, The Texas Company, Wichita Falls.
H. E. Marsh, Amerada Petroleum Corp., Fort Worth.
Edgar J. Marston, Texas Pacific Coal & Oil Co., Fort Worth.
W. M. Massie, Fort Worth National Bank, Fort Worth.
W. R. Mitchell, MacPherson Construction Co., Dallas.
W. A. Moncrief, Fort Worth.
Adrian Moore, Rycade Oil Corporation, Houston.
Edward T. Moore, Simms Oil Company, Dallas.
D. J. Moran, Marland Companies, Ponca City, Oklahoma.
J. M. Mouser, Prairie Oil & Gas Company, Eastland.
Underwood Nazro, Gulf Production Company, Houston.
John F. O'Donohoe, Petroleum Producers Co., Wichita Falls.
R. W. Pack, Sun Oil Company, Beaumont.
J. R. Penn, Fort Worth.
T. T. Pendleton, Roeser & Pendleton, Fort Worth.
Robert R. Penn, Penn Oil Company, Dallas.
J. Edgar Pew, Sun Oil Company, Dallas.
D. C. Proctor, Gulf Production Company, Fort Worth.
Woodall Rogers, Dixie Oil Company, Dallas.
Val Shugert, Sinclair Oil & Gas Company, Fort Worth.
Frank M. Smith, Oriental Oil Company, Dallas.
Levi Smith, Big Lake Oil Company, Texon.
B. S. SoRelle, Pure Oil Company, Fort Worth.
John R. Suman, Humble Oil & Refining Co., Houston.
W. B. Sutton, Vacuum Oil Company, Houston.
F. L. Thompson, Grayburg Oil Company, San Antonio.
Paul Wagner, National Petroleum News, Houston.
Joseph M. Weaver, States Oil Corporation, Eastland.
J. C. Wilson, Wilson-Broach Company, Beaumont.
C. A. Young, American Petroleum Institute, Dallas.
M. F. Yount, Yount-Lee Oil Company, Beaumont.
M. W. Blair, United Producers Company, Wichita Falls.
Earl Calloway, Dixon Creek Oil Company, Amarillo.
J. R. Gahan, Tidal Oil Company, Fort Worth.
R. H. King, King Royalty Company, Wichita Falls.
Ralph Kinsloe, Magnolia Petroleum Company, Dallas.
E. A. Landreth, Landreth Production Corp., Fort Worth.
J. W. Hassel, Dallas.
Geo. H. McIntyre, Continental Oil Company, Fort Worth.
M. B. Sweeney, Sun Oil Company, Dallas.

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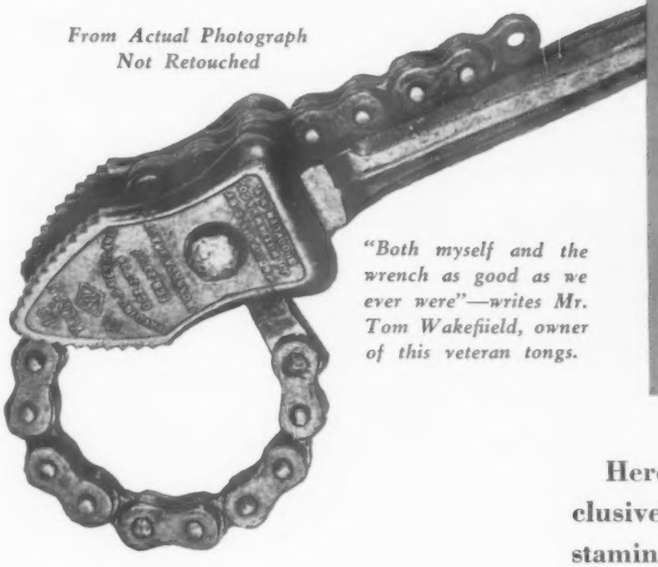
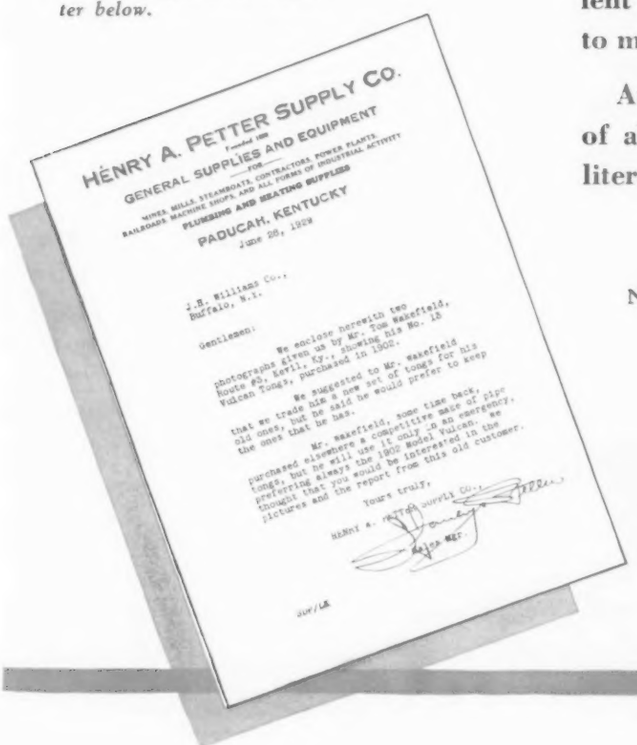


"Both myself and the wrench as good as we ever were"—writes Mr. Tom Wakefiield, owner of this veteran tongs.

This No. 13 "Vulcan" Tongs has seen daily hard service since 1902 and is still in good shape. Note the letter below.



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June 28, 1929

J.H. Williams Co.,
Buffalo, N.Y.

Gentlemen:

We enclose herewith two photographs given us by Mr. Tom Wakefield, Route #5, Kevil, Ky., showing his No. 13 Vulcan Tongs, purchased in 1902.

We suggested to Mr. Wakefield that we trade him a new set of tongs for his old ones, but he said he would prefer to keep the ones that he has.

Mr. Wakefield, some time back, purchased elsewhere a competitive make of pipe tongs, but he still use it only in an emergency, preferring always to use the 1902 Model Vulcan. We thought that you would be interested in the pictures and the report from this old customer.

Yours truly,

HENRY A. PETTER SUPPLY CO.

HAP/LE

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And tong users will find this performance typical of all GENUINE Williams' "Vulcans." Write for literature.

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News From California Fields

BRAD MILLS, *Staff Representative, Los Angeles, California*

Santa Fe Springs Drilling Is Unaffected by Curtailment

LOS ANGELES.—Interest at Santa Fe Springs has been distinctly divided since curtailment became a reality, with conservation and field development presenting entirely different angles. Despite stringent curtailment orders, drilling has been affected only slightly by the order of things.

Judging from the action of most recent completions in the Clarke zone, curtailment became effective in the nick of time. Production had jumped to 100,000 barrels, with nearly all wells producing on edge leases, and the field was in a position to attain a new peak for the year.

George F. Getty, independent operator, continued the fast pace set during the previous week by bringing in No. 29 with an initial production of 8000 barrels of clean oil from exactly 8000 feet. The oil is 35 gravity and considerably lighter than the average produced in the shallower zones. This well follows closely after No. 26, completed a week ago with an initial production of about 9000 barrels. Both are inside wells and show the tremendous possibilities of the Clarke zone. No. 29 is near the center of the field and in an area made famous by blowouts in what is now termed shallower zones. Gas production is about 30 million cubic feet. No. 26 showed a steady increase before being beaned down to meet curtailment requirements.

O'Connell Zone About Done

New production during the week probably would not have more than offset the field decline, but the best completions showed what should be expected of the Clarke zone. The slump in new wells would have been only temporary, as there are now more than 200 active drilling tests under way. Of this number, nearly all are headed for the Clarke zone.

The O'Connell zone, after a long reign, was about ready to stage a fairly rapid decline, even if curtailment had not been inaugurated. This sand has been an unusual producer and far more important than the Buckbee and Nordstrum zones combined. It attained a high peak and held at near the top figure for three months. Its thickness was partially responsible for its consistent yield.

Although little has been heard of curtailment of drilling wells, the conservation program will undoubtedly affect present development within a few weeks. It will be necessary to cut back wells immediately after completion, and since it is possible to produce considerably more than the allowable amount from present wells, operators are expected to see the economy of halting drilling wells at least on top of the objective sand.

All producing zones have been affected by the radical reduction, the deeper sand accounting for the bulk of the cut because they produced most of the field total.

Gradual Decline Expected At Ventura Avenue

Ventura, California. — Although curtailment was not expected to reduce drilling operations in the Ventura field, a gradual decline in field activities is expected from natural reasons. A few tests which were intended to further extend the field or to add to the southern extension probably will fall by the wayside unless more definite results are noted within the next few weeks.

The M. K. and T. Oil Company, discoverer of the southern extension more than a year ago, has drilled other wells but for some reasons has failed to add to its production in the small pocket. The original well flowed at the rate of 1500 barrels of oil and almost as much water, but produced at a satisfactory rate for a long time. It was completed at about 5750 feet and was considered a freak producer. Wells nearby had found the producing sand much deeper and the theory that a fault was responsible for the condition was advanced. Apparently the sand was "spotted" and by chance yielded a good production at this particular place.

Associated Oil Company and Shell Oil Company will continue to develop their holdings on a conservative basis, as they have done in the past. At no time have wells been drilled close together, except in the case of direct offsets.

Landowners Fight Shut-in At Kern Front

Bakersfield, California. — The larger operators in the Kern Front field have agreed on an unofficial plan to shut in the bulk of production, but the objections of landowners and a few of the smaller operators has added to the final decision to reduce the field total to a small percentage of the potential. This field was entirely shut in for some time, but line wells were opened up about a year ago, after pressure had been brought to bear from several sources. Several of the leases contain clauses which require the continuous operation of wells. This has been the basis of claims of a few lessors and a very difficult one to evade from a legal standpoint. The field has a potential production of more than 20,000 barrels, but the average production during the past six months has been considerably smaller. The oil is heavy but is a much more desirable product than similar grades in some Kern County fields.

Two Wells Soon Due for Completion at Elwood

Santa Barbara, California. — Operators in the Elwood field, particularly those on tideland permits, are apparently more content to pinch in wells after completion than to shut down drilling wells, curtailment measures having failed to halt drilling operations. The nature of development in the ocean, where expensive piers are built and equipment and materials are placed with much effort, is such that wells will be placed in a position to produce at maximum at the first signal to remove the lid.

Two tidelands wells are about ready for completion, with both expected to make good producers. Bankline Oil Company's 89-1 is drilling in oil sand at 3425 feet, the top of the formation having been found at 3295 feet, where the 11¾-inch shutoff string was cemented. Rio Grande Oil Company and Barnsdall Oil Company are preparing to complete Doty 94-1 at some point above 3600 feet. This well is showing a good oil sand and apparently will make at least an average producer. Ten wells are being drilled on tideland permits and their completion will give a better clue as to the probable trend of production and maximum producing limits of the ocean permits.

Big Well Gives Impetus to Maricopa Flats Activity

Taft, California.—Added impetus was given drilling operations in the Maricopa Flats district during the week, following the completion of Wellington Oil Company's No. 1 as an 1800-barrel producer at only 3395 feet. With about 30 drilling wells and several new locations, this sector of the Midway-Sunset district promises to develop into the principal producing area of a long strip which formerly was the nucleus of California's oil supply.

Wells completed in the Maricopa Flats district have shown a slower decline than many of those of a more spectacular nature of 20 years ago and promise to settle to an even better figure. Rio Grande Oil Company has

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Pampa, Texas
Benavides, Texas
El Dorado, Arkansas
Seal Beach, California

beaned back its record completion a few weeks ago as a precaution, but it is believed that the well would produce more than 5000 barrels if allowed to flow at a maximum rate. The producing area promises to be larger than originally thought.

Huntington Beach

Huntington Beach, California.—Deep sand activity at Huntington Beach, as limited as it has been in the past, is expected to recede almost to zero during the winter months, failure of the Invaders Oil Company's Mills 1 at about 6100 feet having had a dampening effect upon future drilling. The well will be plugged back to around 5000 feet and tested in the lower Ashton zone, which has produced some oil in a recent completion.

San Luis Obispo

San Luis Obispo, California. — Midwest Oil Company, subsidiary of Standard Oil Company of Indiana, is still having trouble with Hately 1, Section 34-31-15, and is now cutting and pulling the 10¾-inch casing from 2212 feet. Activity in this part of San Luis Obispo County has shown a gradual decline during the past six months and operators are finding it increasingly difficult to effect completions in a spotted black oil belt. Production has been obtained in the Edna area for many years, but no extensions have been made since late in 1927.

Kern County Wildcatting Shifts to Westward

Bakersfield, Calif. — Wildcatting in Kern County has gradually shifted from the east side of the San Joaquin Valley to the west side during the past six months, due to the failure of a few promising tests along the flats and important discoveries near the Midway-Sunset field.

Gulf Oil Company is making a final effort to obtain production in its Union Avenue wells near Bakersfield and apparently will be forced either to deepen the two active tests or drill deeper from around 4500 feet. The Belridge district, productive from shallow sands for many years, is showing a little more activity, with three wells testing lower levels. The Texas Company and Elmer Oil Company are drilling in the Edison area, just east of Bakersfield, where General Petroleum Corporation developed a mixed flow of oil and water about two years ago.

Potrero

Los Angeles.—Several wells in the Inglewood extension of the Potrero field have reached the depths at which production was expected, but the average status of those drilling around 3900 feet is not considered promising. Associated Oil Company has temporarily suspended operations in Prairie 1, an offset to the townlot activity, at 3880 feet, but continues to drill in streaks of oil sand at 3890 feet in Prairie 2. Pacific Southwest Development Company made an unsuccessful production test in Burgman 1 at 3900 feet and is now drilling in gray sand at 4168 feet. Several other wells are approaching the 3800-foot level and the outcome of these tests will give a better clue as to the trend of production .

Revision of California Gas Rates May Be Effected

Los Angeles.—If it becomes apparent that a permanent supply of natural gas is available in California, gas rates are expected to be reduced to meet the new conditions. Heretofore the supply in Southern California has exceeded the demands, but the theory that such a condition would not prevail year after year has prevented a radical reduction in both wholesale and domestic gas rates. Present curtailment measures have stabilized the gas supply, which is expected to supply the cities and localities now using the commodity for an indefinite period.

Carpenteria Regarded as Questionable Area

Carpenteria, California.—The Carpenteria structure, which attracted a wide following several months ago, is now regarded as a questionable area, because of the action of the first well drilled by the Continental Oil Company at about 4000 feet and the failure of Bailard 1, the present drilling well to find even as favorable showings. The original well developed a very high pressure but flowed only a small quantity of gas on a final test. Bailard 1, located a short distance from the ocean, has not shown unusual promise and is now tied up with mechanical troubles at 4535 feet.

This structure lies along the ocean's edge and might be productive if drilled out in the ocean. Plans have been made to drill on piers, but ocean development will not be started for some time.

No Critical Development In Los Angeles Wildcats

Los Angeles.—A survey of the Los Angeles Basin fails to reveal a single critical wildcat, or one that bears immediate watching. Several tests have been started which will undoubtedly develop into important wells, but the absence of important showings in all wells during the week was noticeable.

Continental Oil Company's attempt to extend the Seal Beach field is an interesting move but at a depth of only 2000 feet little should be expected for a while. Shell Oil Company is also drilling on the theory that an extension is possible toward the ocean. Ohio Oil Company's outlook at Venice is not considered bright, Gun Club 1 having passed 6100 feet in hard sandy shale which shows no cuts.

Kettleman Hills Progress Not Encouraging

Coalinga, Calif.—Failure of Petroleum Securities Company at Kettleman Hills to pick up the producing zone at the remarkable depth of 8100 feet in Robinson 1, has occasioned surprise in some quarters and practically proves the structure to dip sharply on the flanks. The well is located on Section 14-22-17 and about one and one-half miles from Milham Exploration Company's discovery well on Section 2. There is some doubt that the sand will be found above 8500 feet. This well has easily established a drilling record in the field, having reached the 8000-foot level in less than four months. The average time in reaching 7000 feet has been far greater, and it was estimated that fully eight months would be required to reach 8000 feet.

The Ohio Oil Company has passed 7260 feet in Smith 1, a test on the South Dome, and the outlook is assuming a still more doubtful aspect. A hard gray sand which shows no cut is not necessarily regarded with suspicion, but failure of the well on a production test at 7000 feet and only slight cuts below the 35,000-barrel flow of salt water at 7030 feet are not regarded as favorable developments.

Several of the drilling wells on the North Dome are making little headway in the flinty formation found below 6000 feet, while the absence of oil sand in more than one of these tests indicate that the structure may be much smaller than originally mapped. General Petroleum Corporation is reaming Oschner 2, slated for a time as the field's second well, but at a depth of 7320 feet the test may not be especially successful. The well was tested at 6850 feet and flowed 650 barrels of 56 gravity oil and about 20 million cubic feet of gas.

Standard Oil Company has 11 wells drilling below 6000 feet, of which several are approaching the 7000-foot level and should be completed soon. The few hundred feet below 6000 feet has required almost as much time as the remaining hole in two of these wells.

Several of the drilling wells are getting unusually deep, having already passed the levels at which the best production was expected. Bolsa Chica Oil Company is drilling in blue shale at 7210 feet in Ferguson 1, but a favorable change in formation has been noted during the last 50 feet. Pacific Western Oil Company is coring hard sand at 7270 feet in No. 27, while Shell Oil Company's Armstrong 1 will be tested at 7175 feet. Standard Oil Company drilled No. 41-3-P to 7215 feet but plugged back to 6280 feet and suspended operations.

[THE THIRD OF A SERIES OF EIGHT AD-ITORIALS ON OIL]

OIL

The New Industrial Giant

ROUNDLY, $11,000,000,000 is invested in the oil industry—more than twice as much as is claimed for the steel industry and about half the valuation conceded to railroads.

More than one-sixth of all the car load freight tonnage handled by American railroads is "refined petroleum and its products." Petroleum products moved by rail are more than twice that of any other group of manufacturers; 150,000 industry-owned tank cars are required to move in bulk the liquid products of petroleum, to say nothing of tens of thousands of ordinary freight cars used to transport package shipments of the non-liquid products.

The transportation story does not end here. An "underground railroad" of 90,000 miles of pipelines carries crude oil to the refineries of the gulf states, the Great Lakes areas, and the Atlantic seaboard.

More than half of the 800,000,000 horse power used in this country is derived from petroleum. The petroleum refining industry ranks fourth in the value of products manufactured in the United States. The railroads transport a larger percentage of petroleum products than any other manufactured commodity. In addition to furnishing fuel for 25,000,000 motor vehicles, petroleum derivatives make a larger contribution to the nation's annual export of manufactured products than does any other single industry.

Petroleum and its products have played a dominant part in building up industrial and financial structures of Texas, Oklahoma and California.

HOUSTON · · · TEXAS

Mt. Poso and Round Mountain

Bakersfield, California. — The Mt. Poso and Round Mountain fields have a substantial potential production and the latter has supported much drilling activity during the past two years, but these districts are kept well in hand by the controlling companies. There has been little demand for crude of the grade produced here and the operating companies have succeeded in keeping all wells shut in after preliminary tests. Many wildcat tests are under way in the district and during the past two years two extensions have been made to the Mt. Poso field, aside from the discovery of two producing structures along the upthrow of a fault running through the district. General Petroleum Corporation, Petroleum Securities Company and Union Oil Company have completed and shut in several wells in the southern extension.

Goleta

Santa Barbara, California.—Both major and smaller companies are adding to their holdings in the Goleta district, where very light oil has been produced in small and uncertain quantities for several years. General Petroleum Corporation is drilling at 2220 feet in More 2, an offset to the original producer, and should soon pick up the sand from which the first well supposedly blew out. This immediate district is proven for gas, but very little oil accompanied the gas flow. The company's More 1 blew out from about 2700 feet, although the hole was drilled past the 4000-foot level. The faulted condition of the district has proven a handicap, wells completed more than two years ago having gone to water within a short time. The high gravity of the oil makes pioneering attractive and the remaining untested structures will be tested during the next year. Standard Oil Company and Petroleum Securities Company are drilling in the district, both holding large tracts.

Oxnard District

Ventura, California. — Standard Oil Company has re-drilled to the original depth of 8155 feet in Citrus 5, a deep test on the Oxnard plains, but has not encountered appreciable showings below 7800 feet. A string of 7-inch casing was cemented at 7580 feet, making it one of the longest strings ever run in Ventura County. Both Standard Oil Company and Shell Oil Company have drilled many shallow tests in this district, the latter having drilled to check the dips on a large block of acreage.

Summerland

Summerland, California. — Whether the importance of the discovery well was over-estimated or the producing sand is confined to a small area flanking the ocean remains a question in the Summerland field, but there is evidence The faulted condition of the district that both theories are partially correct. makes production uncertain, but the best wells will undoubtedly be confined to a narrow strip along the ocean.

The discovery well was completed at about 1400 feet, although oil sand was found at 1000 feet. The presence of this sand had been suspected for years, but the assurance that the oil would be a heavy product had had an unfavorable effect upon development. The shallow production in the ocean, which has been one of California's sights for almost 40 years comes from a monocline which produces little except near the tide line.

Quiet as a Graveyard

Santa Barbara, California. — Every vestage of enthusiasm which accounted for the transformation of the Santa Barbara Mesa district into a forest of derricks within two weeks has disappeared and the area now more resembles a graveyard than an oil field. With only two active drilling wells, the structure holds little promise and probably will go down in petroleum history as "just one of those things." There is still a theory that a deeper sand should be productive, but the major companies are conspicuous by their absence in these tests. The factured condition of the objective sand at 2100 feet sounded the death knell and the two tests now headed for deeper levels are attracting little interest.

Drilling Activities Start in Canadian Border Field

Great Falls, Montana.—In the newly-discovered international Red Coulee field, lying partly in Montana and partly in Alberta, one well has started drilling and two are building rigs. One is standing shut down, making repairs, within a few hundred feet of the pay. The discovery well, in Alberta, is having difficulty hooking up a packer to separate the gas and oil. This is being done in the belief that the amount of oil recovered will be increased materially.

Gas Test Will Be Drilled on Structure Near Helena

Butte, Montana.—The Four Range Gas Company, financed by Butte capital, has started drilling a test for natural gas on a structure east of Helena to supply the towns of Helena, Butte and other southern Montana cities. Contract is for a total depth of 1500 feet, although it is expected that a gas flow will be encountered at 1000 feet.

Woodhawk Structure

Lewistown, Montana.—The Book interests of Detroit are interested now with the Melton Corporation in the well standing on Woodhawk structure, near Winifred, and drilling operations are to be resumed soon in an attempt to develop a gas supply for the city of Lewistown. The Book people hold a franchise for the town.

Prairie Starts Work On Porcupine Structure

Forsyth, Montana.—Prairie Oil & Gas Company has already started its extensive operation on the Porcupine Dome structure in Rosebud County. The Prairie recently took over all of the holdings of the Stellar Oil & Gas Company on the structure. They consisted of several shallow wells which have been standing for some years with pipe in the hole. Two of these have rigs up and will be deepened to the Madison limestone. A new test has been spotted and is ready to start building rig for a deep test. None of the wells previously drilled on this structure (one of the largest in the state) was deep enough to test the potential producing sands, it is learned in the light of recent geological work.

Hiawatha Dome

Rock Springs, Wyoming.—The Texas Production Company is completing a big gas well in new territory on the Hiawatha dome, northwestern Colorado. Its No. 1 Berlin is reported capable of 25 million cubic feet, which will be turned into the Wyoming-Utah pipe line.

Lance Creek Abandoned

Lusk, Wyoming.—The Ohio Oil Company's test to the Sundance formation in the Lance Creek field, eastern Wyoming, has been abandoned after having been held up by a fishing job for several months at 3090 feet. The test was a joint operation with the Argo Oil Company and the Buck Creek Oil Company.

Frannie Gas Supply

Frannie, Wyoming.—S. C. Ferdig and his associates plan to furnish a gas supply for this town and others nearby from the new Frannie field.

Salt Flat Operators Form Water Disposal Company

Houston.—Operators in the Salt Flat field recently held a meeting in Houston for the purpose of perfecting the organization of the Salt Flat Water Company, and the following officers were elected: H. H. Baker, president; J. H. Russell, vice-president; Alex Field, vice-president, and Henry Arnold, secretary-treasurer. All those men, with the exception of Henry Arnold are directors, and the two other directors of the company are C. A. Abercrombie and F. C. Scaley.

The matter of successfully handling salt water from the Salt Flat field was referred to a committee of engineers, consisting of F. L. Buford and S. W. Oberg.

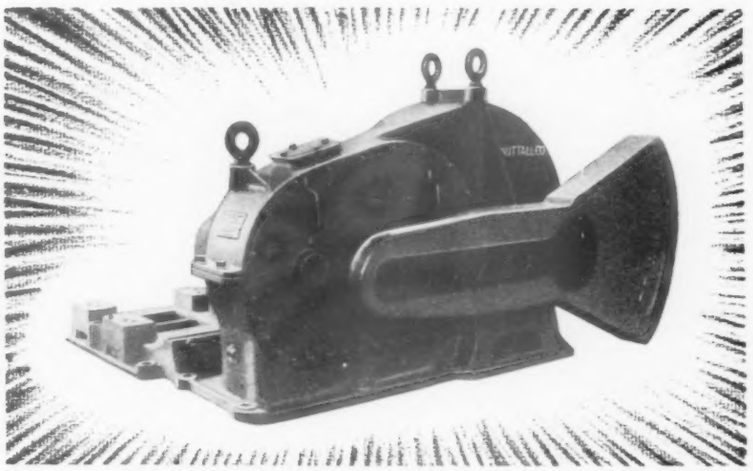
This company has maintained for several months past an organization headed by George Martin to clean up the field and prevent escape of waste oil.

No. 4

REASONS

Why Westinghouse-Nuttall Gears Improve Electrical Pumping

A Type OP-11 double-reduction gear unit, complete with balanced crank and motor bedplate, for 15-35 and 20-50-hp. two-speed oil well motors.



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WITH Westinghouse-Nuttall double-reduction gear drives in place of countershafts and bandwheels, the overall mechanical efficiency of electric pumping equipment—motor to polish rod—is practically doubled, for these gear units have a remarkably high efficiency of from 96 to 98 percent.

The more efficient operation thus obtained results in a considerable decrease in power consumption of the motor, and consequently lowers the cost of production.

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Plenty of strength in every detail preserves the high efficiency of these units throughout the many years of dependable, economical service which they will render.

Detailed information on Westinghouse-Nuttall oil well gear units can be obtained from any branch of the Oil Well Supply Company, located in all oil fields, or from any Westinghouse sales office.

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Floodlighting Equipment	Panelboards	Vapor-proof Ltg. Fixtures

Reeser Urges Unit Plan Adoption Before Texas Producers

(Continued from page 65)

The industry throughout the United States is at this time operating under the greatest cooperative curtailment program ever known and has thus, temporarily at least, saved itself from ruin. While these voluntary curtailment plans are very desirable and those engaged in carrying out the programs should be highly commended for their activity, it must, nevertheless, be admitted that it is a temporary expedient, subject at any moment to the selfish motives or misunderstandings of one or more operators in each pool.

Advocates "Unit Plan"

This industry should not rely on expedients of this kind. It must develop a plan which will be legal, permanent and economically sound. We believe the "unit plan of operation" presents the greatest opportunity for curing many of the evils of our present method.

W. N. Davis, president of your association, recently stated: "Joint ownership and unit operation of oil pools is the only plan which can permanently cure overproduction of crude with its chain of attendant evils. I do not mean to minimize the desirability of temporary shut down and periods of proration. These heroic remedies are essential in acute situations and those who cooperate to bring them about are deserving of the highest commendation, but they are palliatives and not cures."

W. S. Farish, past president of the American Petroleum Institute, says of unit operation: "Unit operation of pools is the chief hope of the American oil industry. The individual pool is the natural competitive unit — man made the subdivisions. I am on record with the belief that if the industry will get behind the unit development plan, in four or five years we will have control of production —will no longer be subject to the demoralizing influences of flush pools. The small producer should make the biggest outcry for unit operation. His economic life is threatened by the present order of competitive development."

I subscribe most heartily to every word that Mr. Davis and Mr. Farish have said on this subject. In this period of great potential overproduction it is extremely important that your association and each individual operator act promptly in an effort to develop the unit plan. There is at this time no definite or fixed plan which will work satisfactorily in every pool, but a plan can be developed for each pool that will save every operator in that pool great sums of money.

The State of Texas should be very much concerned in this subject. It is one of the largest producers in the state—at least the gross production tax brings into the treasury of the state enormous sums —for the first six months of this year it amounted to $2,794,526.70. What a defference it would make to the state if the prices for crude oil were given the same dose recently announced through the California fields.

The University of Texas should also be greatly concerned in this subject. It is at this time receiving approximately $175,000 per month in royalties. Imagine what the difference would be to it with a drastic cut in prices.

State Leasing Policy Scored

The state set aside to the University of Texas more than 2,000,000 acres of lands, of which approximately 250,000 acres are now producing more or less oil. It has under lease at this time, subject to prospecting purposes, approximately 150,000 acres, and there remains, subject to lease under the act of 1929, approximately 1,500,000 acres. I learned only a few days ago that leases are now being sold by the University under a "three-year term." A policy under which leases are sold for prospective purposes on a three-year basis is diametrically opposed to conservation and sound, sensible business methods. The Federal government is doing everything it can to defer the development of oil on public lands; whereas, the University of Texas is actually demanding greater activity in the development of oil which is not needed at this time. Under such a policy, the opening of new pools could, and probably would, wreck the entire industry and cause great loss, not only to the producers, but to the state and its great University. The leases should be for a 10-year period and should contain a clause which will encourage the operators in any pool, wherein the state lands are affected, to unitize such operations. Surely neither the university nor the state wishes to be a party to any wrecking machine, yet the present three-year idea will help to bring about demoralization.

Magnolia Crude Runs Show Substantial Decrease

DALLAS ,Texas. — Crude stocks held by the Magnolia Petroleum Company in the Oklahoma-Kansas district were reduced at an average rate of 22,765 barrels daily during October in order to meet the high gravity oil demand of its refineries and commitments to plants on the Atlantic Coast. Total withdrawal from stocks in the above district amounted to 705,721 barrels during the month, with 8,718,142 barrels remaining in steel tanks at the close of October. Magnolia Petroleum Company has been pulling on crude stocks in the Oklahoma-Kansas district since late July, and withdrawals during September averaged 9277 barrels daily.

Crude runs made from various fields in Oklahoma, Texas, Arkansas, Louisiana and Kansas by the Magnolia Pipe Line Company during October averaged 78,006 barrels daily, as compared to a daily average of 86,452 barrels during the previous month. This drop of 8446 barrels in daily average runs was sustained in Oklahoma, Texas and Arkansas fields because of a curtailment of field work and proration enforcement in the former two states. These daily run figures do not include the large volume of crude being handled daily from fields in Oklahoma and Texas for other companies.

A heavy volume of crude is being shipped monthly via tankers from Beaumont terminals to Atlantic Coast refiners by the Magnolia Petroleum Company, even though its crude supply has been greatly curtailed in recent months, and during October 14 cargoes aggregating 927,783 barrels were dispatched. The bulk of this crude is destined for the plants of the Standard Oil Company of New York. In contrast to the heavy movement of crude, Magnolia Petroleum Company elected to reduce water shipments of refined products to a seasonal low level during October, with only 2,305,125 gallons of fuel oil being consigned and released for coastwise and export destinations, as compared to 6,366,765 gallons shipped in September. Tanker movement of refined oils during October aggregated 27,037,741 gallons, or 15,127,439 gallons less than the total volume dispatched during September.

The sharp reduction in fuel oil shipments is partially due to the fact that the Beaumont refinery of the Magnolia Petroleum Company is now equipped to run all material down to coke, having just added 12,000 barrels additional Cross crocking units and three new re-run stills, aggregating 30,000 barrels daily capacity.

Total crude runs made by Magnolia Pipe Line Company, exclusive of common carrier business, from fields in Oklahoma, Texas, Arkansas, Louisiana and Kansas, during September and October, 1929, follow:

Fields—	September Totals	October Totals
Wewoka-Cromwell	813,908	595,821
Healdton	202,409	204,114
Hewitt-Graham	143,516	162,140
Cushing	104,111	106,118
Yale	40,840	42,414
Seminole	46,834	41,838
Augusta (Kansas)	34,056	34,039
Totals Okla and Kan.	1,385,674	1,186,484
Luling District	284,904	291,565
Mirando District	169,943	168,607
Panhandle District	80,976	89,945
Electra	80,676	81,442
Crane County	62,917	68,592
Burkburnett	59,576	66,169
Winkler County	62,473	51,485
Howard County (Deep)	47,932	48,812
Lockhart-Lytton Springs	29,712	30,728
Archer County	20,912	20,940
Mexia-Wortham	19,828	20,076
Desdemona-Comanche Co.	16,383	16,730
Iatan-Howard County	15,122	14,858
Corsicana-Powell	12,348	11,978
Corsicana (Heavy)	8,831	8,629
Ranger-Olden	4,443	8,422
Stephens County	8,178	7,958
Petrolia-Clay County	2,111	1,376
Panola County	836	1,313
Thrall-Williamson County	983	1,149
Shelby County	293	299
Totals for Texas	993,377	1,011,073
Bull Bayou	31,960	34,238
Cotton Valley	22,706	31,742
Pine Island	24,260	26,096
Hackberry	21,664	20,000
Haynesville	5,588	5,474
Totals for Louisiana	106,178	117,550
Smackover	61,836	58,645
Rainbow	37,085	35,126
El Dorado	6,131	5,517
East El Dorado	3,276	3,793
Totals for Arkansas	108,328	103,081
Totals for five states	2,593,557	2,418,188

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Some of the Franklin OF Good Points

Enclosed type
Low Fuel consumption
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Piston rod is fitted with metalic packing which never needs adjusting or replacing.

Every spring exposed.

Complete simplicity with practically no adjustment.

In case of belt breakage engine automatically stops.

Fuel pump driven by eccentric running in oil bath.

Bearings are removable and reversible.

Only standard threads used. No special wrenches required.

Cylinder has 3 point, force feed lubrication.

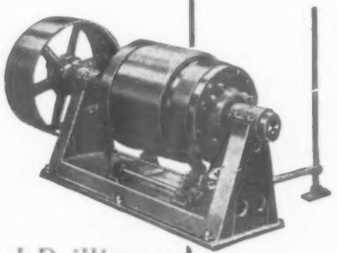
Balance of lubrication is splash feed.

Pistons are air cooled.

All nuts subject to vibration are castillated and fastened with cotter pins.

Most economical to operate in fuel, lubricant, water and repairs.

Easy to start.



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Construction and design prevent Reverse Clutch Troubles.

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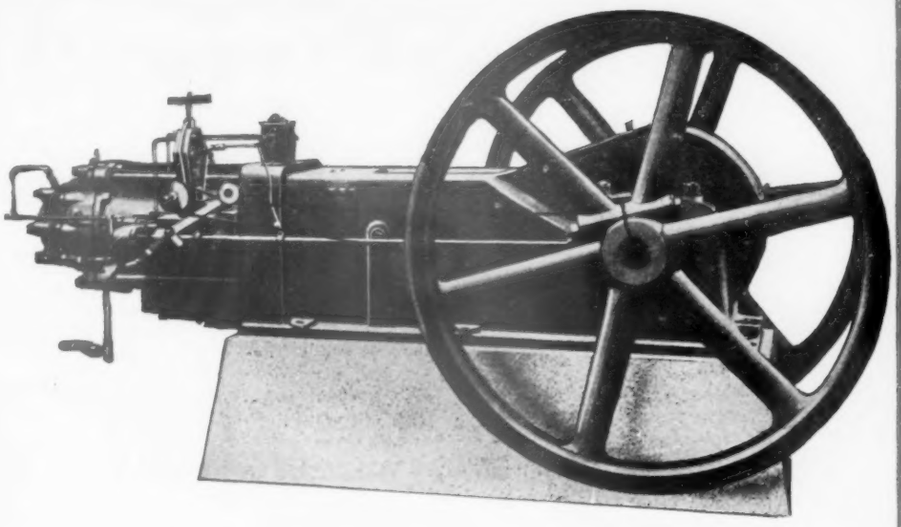

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The new and improved Franklin Oil Engine, identified as type OF is made in three sizes: 12 x 16 (40 HP) and 13 x 16 (50 HP) and 16 x 16 (80 HP) for drilling, pumping and power.

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After drilling the well, the operator can install one of the lighter units upon removal of the drilling engine. It fits the same block perfectly.

It is to the operator's interest to see that his drilling contractors use the Franklin since by doing so the cost of a new engine base is eliminated.

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NOTE—Type OF is readily converted into type OG for gas fuelization.

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OIL WELL SUPPLY COMPANY

Branches in All Oil Fields

Proportion of Formation Gas to Oil

(*Continued from page 26*)

shown, extending perpendicular to the illustration in an anticline, and being approximately circular in the dome type of field.

If the casing is set as shown, immediately at the top of the formation, the well will blow dry gas, or there may be perhaps a mist of oil, blown out with the gas. Such a well presents high proportions of gas to oil, when tubed as shown, and, since each cubic foot of gas released from the formation has its proportionate effect on formation pressure, and on the consequent release of dissolved gas from the oil in the formation, such a well requires retubing.

Free Gas Hard to Control

If this type of well is tubed properly with a flow line to admit saturated oil into the flow line only from the bottom of formation, and to exclude the upper free gas, as in Figure No. 6, and the well flowed at such a rate as will not completely evacuate the bore, and the surrounding formation of its oil, then dry gas cannot enter, but remains trapped where originally found, together with subsequent accumulations of additional gas from solution. And the pressure of all such gas is then held in the formation, where its energy may be continually exerted to elevate oil up the flow line, and to maintain formation pressure.

Free gas is always difficult to control in its proportion to oil, and where the above condition exists, if the proportion of gas cannot be brought down, such a well should be closed in until a remedy can be found and applied, for it will effect the proportion of gas in other wells within its influence, elevating the proportion of gas in all wells so influenced by pressure reduction due to withdrawals of gas. To control the proportion of gas in other wells, then, it is first necessary to control the proportion in peak wells especially.

Although a formation may contain initially, no free gas in the formation with the oil, with pressure reduction comes gas evolution, and as evolved gas migrates to the peak of structure, due to buoyancy, or replaces other gas that has already so migrated, *the condition of Figure 2 may alter to that of Figure* 1, as indicated by field work in natural gasoline plant over a number of years, which observations included the quantity, as well as the quality of gas from peak wells and from flank wells.

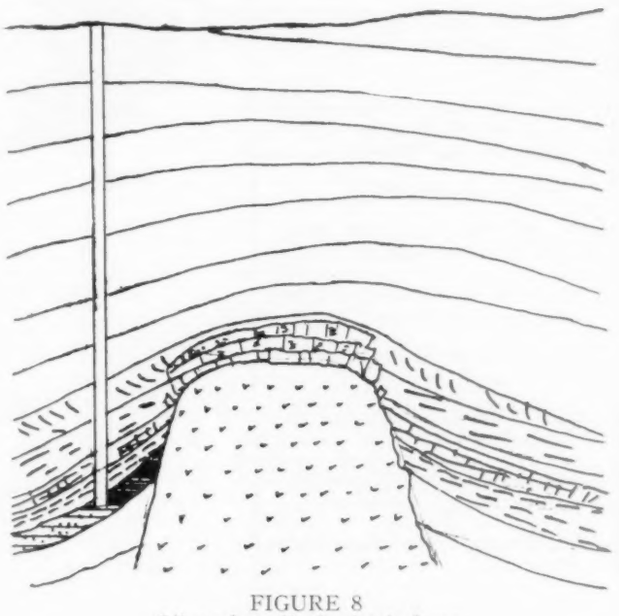


FIGURE 8
Oil sand on flank of salt dome

Flank Well

The next type of well is one on the flank, as shown on Figure 7, taking for example, this time, a monocline. Here, even though the pressure differential may be excessive, compared with what might be necessary under reasonable conditions, gas released upon the establishment of differential, migrates toward the peak, away from the well, on the up dip side, and past the well from the down dip side. Such a well therefore develops a lower gas proportion than peak wells, although migrating gas elevates the proportion of gas in wells further up the dip toward the peak.

The propagation of formation pressure differentials is generally slow; its effect may be slowly observed in an adjoining well. In other cases, after a slow propagation, a sharp difference may be noted upon the arrival of lowered pressure at a well. Thus, wells in the same sand should also be considered as a group for there is mutual interference eventually of wells with one another as to gas proportions.

A precise study to clarify the above would be out of place in this paper. This is not the study of a given field. It is rather, a basis of study, for any field, applied by first preparing curves of production, of gas proportions, of velocities and expansions of ratios, all wells as they come in, and then by plotting so as to indicate on one well curve, the effect of other wells, for outlining the inter-relation of wells as to gas proportions.

If a peak well blows gas, or produces oil with a high gas proportion, which elevates the proportion of gas in other wells, the other wells should require no attention, but the well with the high gas proportion should be first controlled, when the proportions in the other wells will lower.

Rate of "Follow-up" Water

The third type of well is that at the lowermost producing point on the structure, and the same is outlined in Figure 8, as being the flank of a highly tilted oil bearing sand alongside the salt core of a salt dome.

While this type of well offers little difficulty as to gas proportion, if the rate of follow up of water, due to lowering formation pressure, is excessive, such a well goes to water. The rate of water follow-up in salt dome fields may be greater than in structural fields; in some of the latter type of fields, water has not followed up in anything like a proportional amount to the withdrawal of oil and gas, and the pressure reduction as a consequence.

Even though a sand may be porous, and the pore spaces large, water follow-up is more a measure of pressure quantity relative to migration facilities. The follow up in shallow wells therefore, may be expected at a slower rate than deep wells. In several monoclinal fields, under observation of the writer for nearly 20 years, there has been no appreciable follow-up of water that interferes with production, while, in others, water has fol-

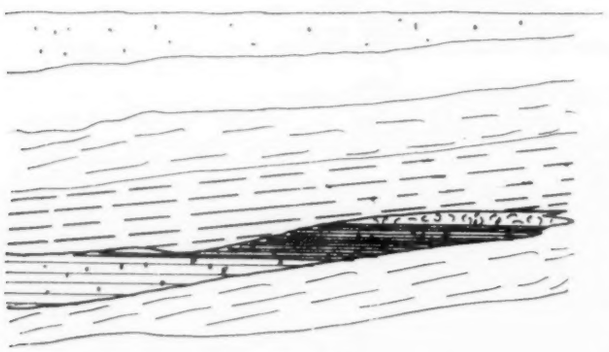
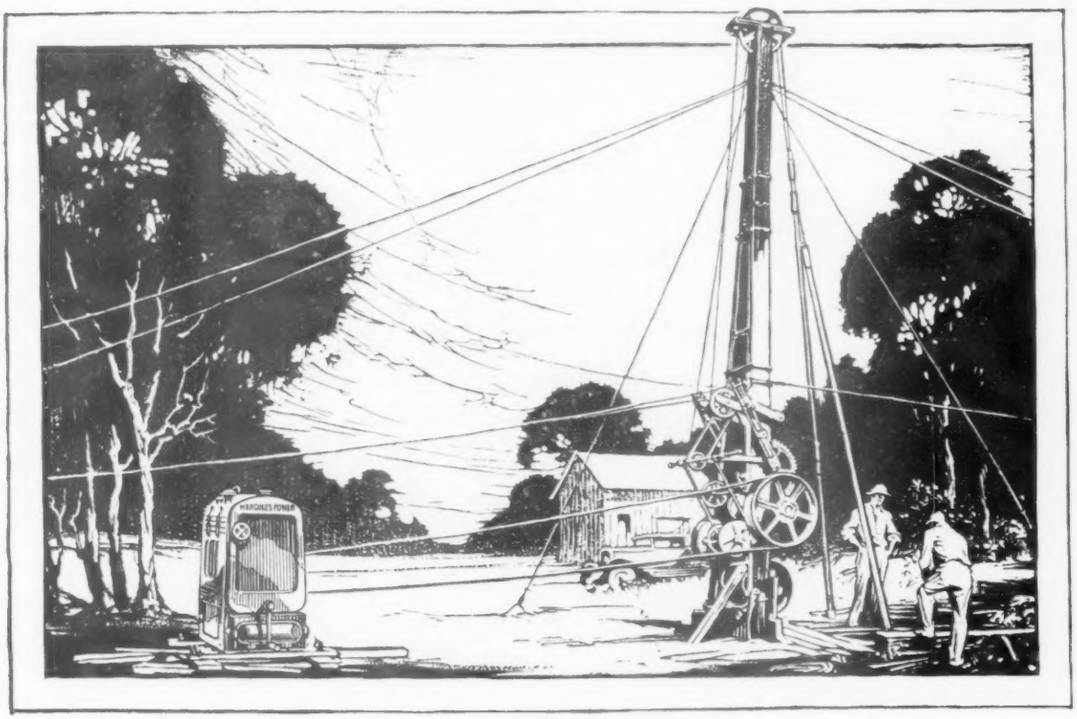


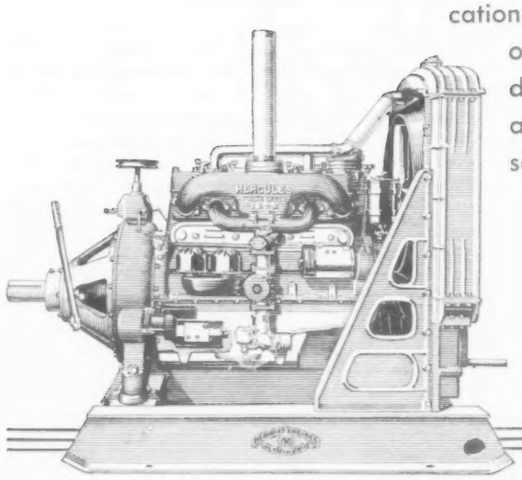
FIGURE 7
Monocline with free gas trapped in peak

Hercules Power Operates Lease Maintenance Machine



For cleaning clogged wells; pulling rods, tubing and casing; and for drilling wells deeper, Hercules Engines are specified for the new "Type K" lease maintenance machine developed by the Star Drilling Machine Co.

This new Star equipment, designed for 2,000 ft. work, provides but another example of the successful application of Hercules Engines and Power Units to oil-field operations. On portable, rotary and standard drills, on pumps, compressors and other machinery as well, Hercules Powerplants perform with time-saving, cost-cutting efficiency.



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lowed the withdrawal of oil and gas quite rapidly.

Water Control

We now see the advantages of low gas proportions as to controlling both bottom and edge water. If formation pressure is sustained continually at the highest point possible, water encroachment is deferred.

Bottom water may rise in and below the vicinity of a well with high reduction in well pressure; edge water follows up the withdrawal of gas and its pressure, as definitely indicated by great masses of data accumulated by the writer over a quarter century period.

Gas Evolution

There are two general conditions as to the evolution of dissolved gas. If the oil is fully saturated with dissolved gas at the pressure and temperature existing, then the slightest reduction in pressure liberates some of the dissolved gas, which then exists as free gas, in the zone of pressure reduction, and which migrates laterally and upward due to buoyancy of gas bubbles in oil.

But, if the amount of gas in solution is insufficient to fully saturate the oil with gas at the existing pressure and temperature, then the formation pressure may be reduced to the saturation point, *without gas evolution,* but, below this point of pressure, gas will evolve with further reduction of pressure — all of this obeying the well known natural laws of physical chemistry.

The nature of some of the upper fractions of gas also affects solubility. If an oil is saturated with gas at a pressure lower than the liquifying pressure of the gas, at existing temperature, and there then exists more of the same gas, the additional quantity will not dissolve, but remains as free gas. But, if the formation pressure is sufficiently high to liquefy intermediate fractions of gas, these are then present in the oil as liquid, and not as dissolved gas, and the weight of the oil, its gravity, is lowered, per unit volume.

The writer believes that it has not yet been definitely determined whether dissolved gas is contained in oil as liquid, or not. If it is liquid, then its proportionate part will dissolve gases still higher in the series.

A comparison might be drawn, partly, in the matter of steam under pressure, in equilibrium, in the presence of water. If the pressure on the steam is elevated, some of the steam immediately liquifies, existing thereafter as water; if the pressure is lowered, more steam evolves from the water, until equilibrium is again reached. If gases were as simple as steam, the matter would be clear, but gases are not; they have ascending and descending characteristics as to liquification pressure and temperature of the various gas fractions.

It is these variables, in part, that complicate the matter. If computed with precision, granting that all variables were known, the matter would be completely submerged in mathematics so far as to be totally useless for field work.

It is evident that when only oil, and its dissolved and liquefied gas are allowed to enter the flow line, the proportion of gas dissolved depends upon the saturation secured by pressure of the formation. For, as wells are drilled deeper, formation pressures increase, and with increased pressure, comes greater solubility, and a greater proportion of gas.

Therefore, a well 6000 feet deep will have a higher proportion of gas than one 3000 feet deep.

It is a peculiar fact that as wells are drilled to successively greater depths, the proportion of gas found with the oil increases, a matter which has been fully explained by others studying the matter. It appears that when oil is found at higher levels, if it has migrated to such level, the lighter fractions have been left behind, or, otherwise, the lighter fractions have found their way out, migrating elsewhere, or penetrating and saturating upper shales.

Then, as a general proposition, the deeper oil is found in the ground, the greater is the proportion of liquefiable and unliquefiable gas.

Since formation pressures generally approach the pressure of a water column equal in height to well depth, and since deeper wells show more gas in proportion to oil, then deeper wells contain more gas in solution, proportionately to shallow wells. And regardless of depth of well, since the energy stored in formation gas by natural forces, increases as above set out, the energy of gas in deep wells compares favorably with the work to be done of lifting oil to the surface, for, as the energy requirement increases, the available energy from the formation gas increases, and *we should be able to recover equally as large a percentage of oil from a deep sand as from a shallow sand with equally as low direct lifting costs during the flowing period.*

A fortunate situation thus exists.

Solubility Factor

Some oils will dissolve 50 per cent. by volume of unliquefiable gas, while others dissolve more. The basis of computing solubility might be explained here more fully. Solubility of gas in oil is determined by volume, not by quantity. The measurement of gas, for this purpose, is converted into the quantity at atmospheric pressure. A space of one cubic foot will hold one cubic foot of gas at atmospheric pressure, but, if the space be filled with gas at two atmospheres of pressure, corresponding to 14.7 pounds gauge pressure, then we will have a quantity of two cubic feet of gas, but a volume of only one cubic foot.

Since the solubility of gas in oil is in terms of volume, when we double the pressure in atmospheres, we double the quantity of gas entering into solution; that is, this is not a straight line ratio, but the error is so small, in comparison with other limits of error in dealing with this subject, that the ratio may be assumed as straight line.

If an oil will dissolve 15 cubic feet of gas per barrel at 100 pounds pressure, it will be found to dissolve approximately double that amount at 200 pounds pressure, and so on. And, as pressure in a formation subsides, the same approximate straight line ratio will hold, basing these data, however, upon the unliquefiable portion of gas at existing pressure and temperature.

Some arithmetic may here be of interest. If the solubility of a certain gas in its oil is 20 cubic feet per barrel of oil per 100 pounds pressure, 100 cubic feet will be contained with full saturation, at 500 pounds pressure. At 500 pounds, we have 35 atmospheres of pressure, and the volume of the gas is therefore 100 divided by 35, or 2.8 cubic feet, and the percentage of dissolved gas by volume is therefore 50 per cent. But, measured at atmospheric pressure, the quantity of gas is 18 times that of the oil.

Formation Pressure Reduction

Immediately a well begins to flow, formation pressure in the oil sand surrounding a well bore, is lowered and, if the oil is fully saturated at the existing pressure and temperature, then some gas begins to evolve from the oil in the formation subjected to pressure reduction.

If, however, the oil is incompletely saturated with gas, or in other words, if all the gas is in solution, and there is not enough present to completely saturate the oil with gas at existing pressure and temperature, we have a different condition of course, for no gas will evolve from the oil until the pressure lowers to the saturation point of the quantity of gas found, proportionate to the oil.

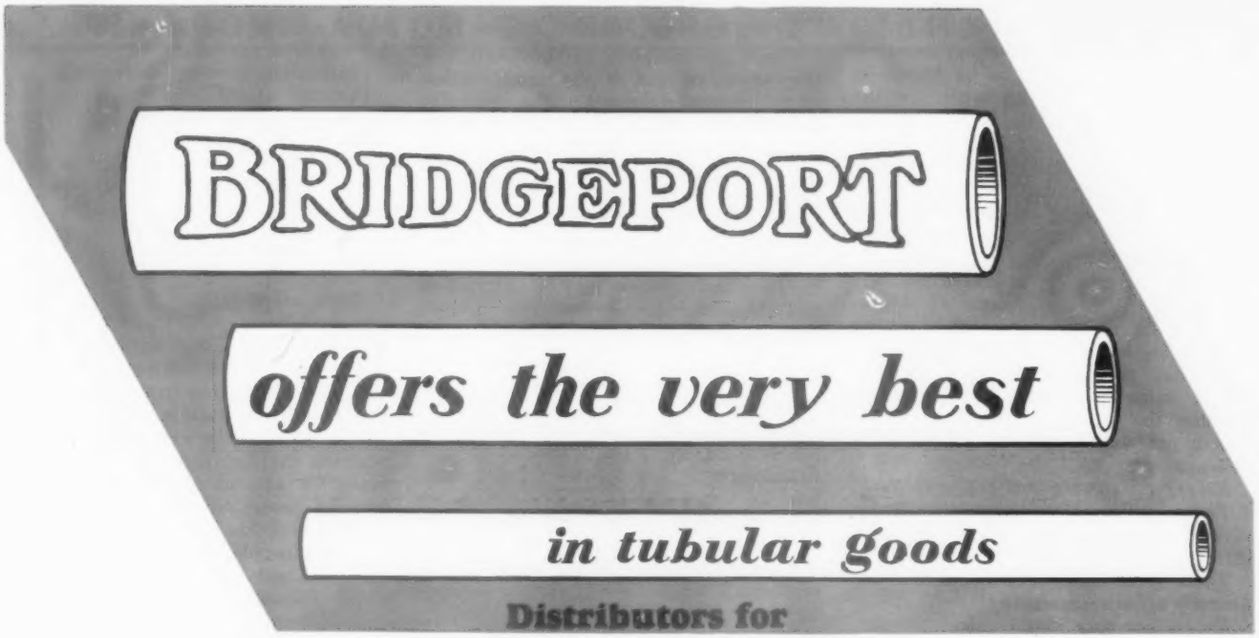
This makes it important to observe in the field, at the well, the conditions under which gas is found and produced, beginning with the initial well of the field, and then correlating peak and flank wells data. If the well blows free gas initially, without any oil, or with a mist only of oil, we may be sure that the oil is fully saturated with gas, with a surplus, and that there is an ample supply of gas, and its energy, for all lifting purposes, because, since the oil is fully saturated, the pressure energy of gas so held in solution is in almost all cases sufficient.

But, if no free gas is found initially, we must pursue another course, which is that of ascertaining the quantity of gas held in solution, for, in such case, the pressure existing has dissolved all gas of the formation, into the oil, and there is no surplus of gas over that required for full saturation, as in the first case.

If there is a deficiency of gas in solution, under existing pressure and temperature, no free gas will be found, whether wells are on the peak or flank, initially, but, if the gas quantity is found to be exactly that required for complete saturation at existing pressure and temperature, we may then be sure that the surplus has migrated elsewhere, to a peak in structure, and that when the peak is reached, free gas will there be found.

We then have in the foregoing a means of immediately determining, by the physical constants of gas and its oil, whether a well is on the peak, or on the flank.

Further, since the gas produced with oil, may be both that of solution and liquefication, and since flank wells produce just such gas, the proportion of lower



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fractions liquefiable under existing conditions of pressure and temperature, is found, by gas analysis, to be higher in flank wells than in peak wells, for the free gas of peak wells is that of the upper series, and not greatly of the lower.

No especial preparation is necessary for obtaining the foregoing information; the proportion of natural gasoline in gas is as good a basis as especially prepared experiment.

The *quantity* of gas produced per barrel of oil is not an indicator of saturation, by any means; the layout of piping for flowing wells can serve to set up such formation pressure conditions as will evolve more gas from oil than needed, whether the oil is fully saturated with gas or not, as the writer is endeavoring to point out.

Before a discovery well begins to flow:

There has been a stable condition set up in the oil and gas sand as to pressure distribution;

There is no movement of oil and gas laterally of any magnitude;

Excess gas over that required for saturation will be found trapped in the roof of the structure;

If there is insufficient gas for saturation, at prevailing pressure and temperature, no free gas will be found; instead, all gas will be found in solution;

Water, in steeply dipping traps, will be found surrounding the oil in closed anticlinal structures, and domes; in monoclinal traps, water will be found on the lower side. But, with gentle dip, bottom water may be found with the oil.

Differential Generalities

The pressure differential required for driving oil laterally through a sand is not as high as it may seem. Wells flow with a formation pressure differential of only a few pounds, for we must remember that the area covered by a circle of influence increases as the square of the diameter.

Closely drilled wells, then, usually have a higher differential than more reasonably spaced wells.

The differential, as observed by the writer, ranges from as low as 25 pounds, up to 950 pounds in the early life of the field. If one area is drilled thickly, and a distant well is brought in, the differential between the latter area and the first may be greater than the above, but as between adjoining wells the differential is low, as above.

These are generalities; there has been no method of calculating pressure diffusion, flow through sand laterally of oil and gas, and, because of the very great number of factors involved, the writer believes that in so far as any practical use is concerned, we will not at any time be able to secure this information in such way as to reduce it to mathematical exactness, ahead of determining sand conditions, and therefore, after such information is available, which is only after it has less value, it is then too late to utilize.

Then the only advantage in generalities is to lay down general principles, upon which gas proportions may be based for attaining low proportions.

Variance of Solution Factor

The beginning point for obtaining low proportions of gas, is the determination of the physical constants of the particular gas and the particular oil, either by securing bottom samples of the saturated oil, or by surface application of gas under pressure to the oil.

The latter method is preferable in that when the gas is compressed and cooled to formation pressure and temperature, the liquefiable portion may be ascertained and the remainder is then that amount entering into the matter as bearing on solubility.

If 50 per cent. of the gas liquefiable under the pressure and temperature conditions obtaining, then the remaining 50 per cent. is the gas of solution; some fields show a high solubility factor, unless the above separation is made. The solubility factor, then, is to be based upon that amount of gas unliquefiable at existing pressure and temperature; any other basis which includes in the solubility factor, liquid portions, is manifestly erroneous.

Various results show that on the correct basis as above, the solution factor does not vary as much as thought, estimating from currently made tests of the same. The pressure differential being required for driving oil laterally, it then is a matter of first import, for, with a reduction in pressure, there is a liberation of gas from solution due to reduction. In conserving gas, a major object is the prevention of the evolution of gas in the formation for several reasons, as below:

1. As a general rule, in nearly all fields, each barrel of oil initially contains, in its dissolved gas, sufficient energy to lift that barrel to the surface, even with a low mechanical efficiency.

2. Since a reduction in pressure evolves a portion of this gas of solution, from every barrel of oil effected by pressure reduction, the free gas quantity released within the influence circle, is greater than required for elevating the oil reaching the well bore, to the surface. Hence, with excessive pressure reduction in establishing pressure differential, excessive quantities of gas will be produced per barrel of oil, for excess gas so released travels more easily to the well bore, and it is difficult to exclude that gas from the flow line.

3. The flow of oil from immediately adjoining the well, tends to lower the saturation in the zone around the well, while at the same time the free gas liberated by pressure reduction tends to increase, setting up an opposite condition from that desired for maximum gas duty. With excessive differential, there will be more gas and less oil within the influence circle.

4. Then, in the attempt to limit the proportion of gas per barrel of oil, it is needful to operate the flowing well with as low pressure differential as may be obtained, when the well is flowed at its capacity.

5. The capacity of any well, at its minimum proportion of gas per barrel of oil, is a fixed quantity, depending upon:

Formation pressure
Permissible pressure differential
Porosity of sand
Viscosity of oil
Thickness of sand
Area of inflow to well, which is a matter of well diameter in the sand, and lithology
The rate of follow-up of water.

Second Phase

Thus far in the this article, the writer has considered only the formation, its pressure, its gas, and formation differentials in pressure, without including the flow line. It follows from what has been written that formation oil will release dissolved gas in the exact proportion that pressure on the formation is lowered. Since the amount of gas evolved in an oil sand necessarily should be as low as possible, for conserving gas for future duty, the avoidance of needless pressure reduction and accompanying gas release in the formation is the one essential to high recoveries through a greater utilization of formation gas and its energy. Then, when we conserve formation pressure, we conserve formation gas, and therefore, the reductions in pressure, and the pressure gradients should be only such as will flow a well at capacity—no more.

The writer is making what he hopes is a clear, concise distinction between the duty of gas down in the formation and an effort to separate the same from the duty of gas in the flow line. Such a distinction is quite necessary. While flow lines may be correctly proportioned, flow lines are not the sole essential in low gas proportions.

Mechanical Efficiency

The mechanical efficiency in the utilization of gas energy is a matter solely of the work done in lifting oil from where the effect of formation hydrostatic pressure ceases, or the flowing working level, to the surface, and the total available pressure energy of the gas produced with the oil.

Selecting a well at random; 3320 feet depth to the top of oil bearing formation, and 3540 feet to the bottom of the same, with a 2½-inch constant diameter flow line, with an interior diameter of 2.323, inside of 6⅝-inch casing with ⅜-inch orifice, or choke, is at the surface. Pressure in the casing at the surface is 810 pounds; pressure in flow line, at surface, inside of choke, is 260 pounds.

The daily production is 710 barrels of 31 Be. oil and the gas produced per barrel, 510 cubic feet.

We have: Foot pounds developed per day in lifting 710 barrels from top of formation to surface, against 260 pounds pressure at the surface, making a total lift of 3918 feet, 745,561,120 foot pounds energy contained in 263,100 cubic feet of gas at 810 pounds pressure, or 55 atmospheres, 2,624,138,700.

If these two figures are used, the efficiency becomes 28 per cent. Such an efficiency, though, is far from correct, as outlined below.

In the first place, the addition of 260

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pounds head at the surface is entirely a loss, not only in the addition of 598 feet of head against which the oil must be lifted, but also, in the gas volume itself, for, at 260 pounds, or 17.7 atmospheres, 1 the gas occupies——of its volume at at- 17.7 mospheric pressure, and since the gas lift depends upon volume of gas at the pressure used, we see at once that if the flow line were designed to have a terminal pressure of atmosphere, the quantity of gas at once reduces in the above proportion.

Again, the gas itself does not lift the oil all the way to the surface in the manner of an air lift, but the static pressure of formation serves to lift oil to a distance of 2026 feet above the top of the formation, and, with evolved gas, assisting up to that point, above that point, the operation becomes a simple air lift, calculable by all current air lift rules.

Now, taking the actual existing figures: lift, 1294 feet. Foot pounds developed in lifting 710 barrels 1294 feet, 279,948,720. Foot pounds contained in 263,100 cubic feet of gas at 810 pounds pressure, 2,624,138,700.

Mechanical efficiency, corrected, 10.7 per cent.

Velocity and Friction

It is evident, in any flowing well, that there is one constant—the power developed in lifting one barrel of oil to the surface—which is always the same for the well being considered. The variables, such as quantity of gas, oil and pressure, resolve into one factor, velocity.

We know that friction losses increase as the square of velocity, hence, velocity should be held down to a reasonable figure. Some deep wells, of large production of oil and gas, may operate with fairly high velocity, up to 75 feet per second or higher in the flow line average, while others of lower production may operate at as low a figure as 10 feet per second average.

At the bottom of the well, all gas may be in solution, and no addition is needed there, of course, for gas in computing the beginning diameter of flow line. But, as the oil rises, and pressure reduces, gas evolves, and if the velocity is fixed at 10 feet per second at the inlet and the cross sectional area is constant in the flow line to the surface, we get extremely high velocities in deep wells toward the upper end. In the well cited, the initial velocity, in a flow line 2.323 inches in internal diameter, is 1.5 feet per second, of 710 barrels of oil per 24 hour day. At the surface, in the flow line, inside of choke, velocity of oil and gas is 7.3 feet per second, based upon the gas being at 17.7 atmospheres of pressure, with a release factor of 60 feet of gas per barrel, at such pressure.

These velocities are too low for efficient operation, as indicated by the efficiency calculated before.

The Losses of Such an Installation Consist of:

The power contained in gas at 260 pounds pressure—the pressure in flow line ahead of choke;

The power contained in that portion of the total quantity of gas still held in solution with oil entering the choke; and

The loss due to lesser volume of gas at choke pressure. The flowing of a well, like the air lift, depends upon the volume of gas for securing intimate mixture of bubble with liquid; friction contact area decreasing with volume of gas, and volume decreasing with pressure, if a definite volume of gas will do the work, then, the above gas, possessing 1/17.7 of its free volume, is used in an equally greater proportion as the free and compressed volumes.

The pressure at the bottom of a flow line is that of the weight of the mixture in the flow line from bottom to top, plus the friction, divided by the cross sectional area; since the evolution of gas progress up a flow line, and since pressure lowers up the flow line, the density of mixture is lower at the top than at the bottom, making the computation of velocity a matter of taking the averages of velocity at intervals in the flow line.

The mechanical efficiency of a flow line must include the energy of all gas produced with oil; if any gas is evolved in a trap, it is a part of that produced with oil and must be included.

It will be found, at any point in a flow line, that the amount of gas contained in the line is proportionately greater in volume than at any point below, due both to expansion of previously evolved gas, and due to evolution and expansion of gas between the two points. Velocity curves therefore are to be based upon evolved gas—that dissolved in oil due to pressure, and that liquefied in oil, also due to pressure.

Expansion Curves

The gas dissolved in oil due to pressure assumes almost a straight line ratio, but the gas liquefied in oil is not a straight line ratio. The latter is a ratio depending upon the liquefiability of gas, and not solubility.

Velocity curves therefore are straight line ratios when there are no appreciable fractions liquefied, and are curved ratios when there are fractions evolving that were previously liquefied gas.

This accounts for sudden rises in the proportion of gas produced with oil, for, when formation pressure lowers to the evolution point of a certain liquefied gas fraction, that fraction then evolves, adding its quantities to the previously straight line evolution of dissolved gas. It also accounts for the rise in gasoline content of casinghead gas with lowering pressure on formation.

Expansion curves are to be made on the basis of determining the volume of all free gas at one point in the flow line, then the volume of that gas at an upper point in the line, to which is added that amount of gas evolved between the two points, and expending down to the pressure of the upper point in the line, the two quantities forming a total—one being a major, and one being a minor expansion ratio.

The expansion ratio curve is subject to the same influence of evolution of liquefied gas fractions, in addition to the evolution of dissolved fractions.

Light oil fields, then, are more difficult of methematical solution—that is, oil fields containing gas with a high proportion of the intermediate upper fractions of gas, than fields with a high boiling point oil, in which oil there is a deficiency of the lower gas fractions.

(To be Continued)

Sunray Buys Controlling Interest in Oklahoma

Tulsa.—Sunray Oil Corporation has acquired control of the Homaokla Oil Company of Oklahoma City through the purchase of 215,000 shares of stock from John Dickson, president of the Homaokla Oil Company, which paves the way for a merger of the two concerns. This is one of several transactions made within the year by the Sunray interests, which has boosted it to a position among the stronger and leading independent oil concerns of the Mid-Continent region.

The contract between John Dickson and the Sunray Oil Corporation calls for the transfer of the block of stock on December 1, at $5 per share. The Homaokla Oil Company has 420,000 shares of stock outstanding.

As a result of the deal Sunray Oil Corporation gets control of 126 producing wells, 1781 barrels of daily net production, four drilling wells, 2687 acres of producing leases, 22,726 acres of undeveloped property, 4068 acres of undeveloped royalty acreage, 332 acres of developed royalties, and a skimming plant at Allen, Oklahoma, with a capacity of 3000 barrels daily.

When the transaction is completed Sunray Oil Corporation, operated in Oklahoma under the name of Sunray Oil Company, will have 5000 barrels daily production, 219 producing wells, eight drilling wells, 4272 acres of developed leases, 332 acres of developed royalty leases, 4068 acres of undeveloped royalties and 62,243 acres of undeveloped leases. In addition the company controls the Sun Royalty Company.

Sunray Oil Corporation has 689,000 shares of $5 par common stock outstanding, and through the consolidation will have 1,109,000 shares of $5 par common stock.

John Dickson will become a director of the Sunray Oil Corporation, which is headed by C. C. Hamilton as president and treasurer; C. H. Wright, vice president and general manager; Russell S. McFarland, vice president in charge of land, geology and development, and Irving E Rines, secretary.

Tulsa will become the headquarters for the consolidated interests, with an office likely at Oklahoma City for Western Oklahoma and Central Oklahoma activity.

This marks the first step of the Sunray Oil Corporation in refining. Sunray Oil Corporation's principal producing holdings are in the Allen field and connections to its new refinery with gathering lines will probably be made.

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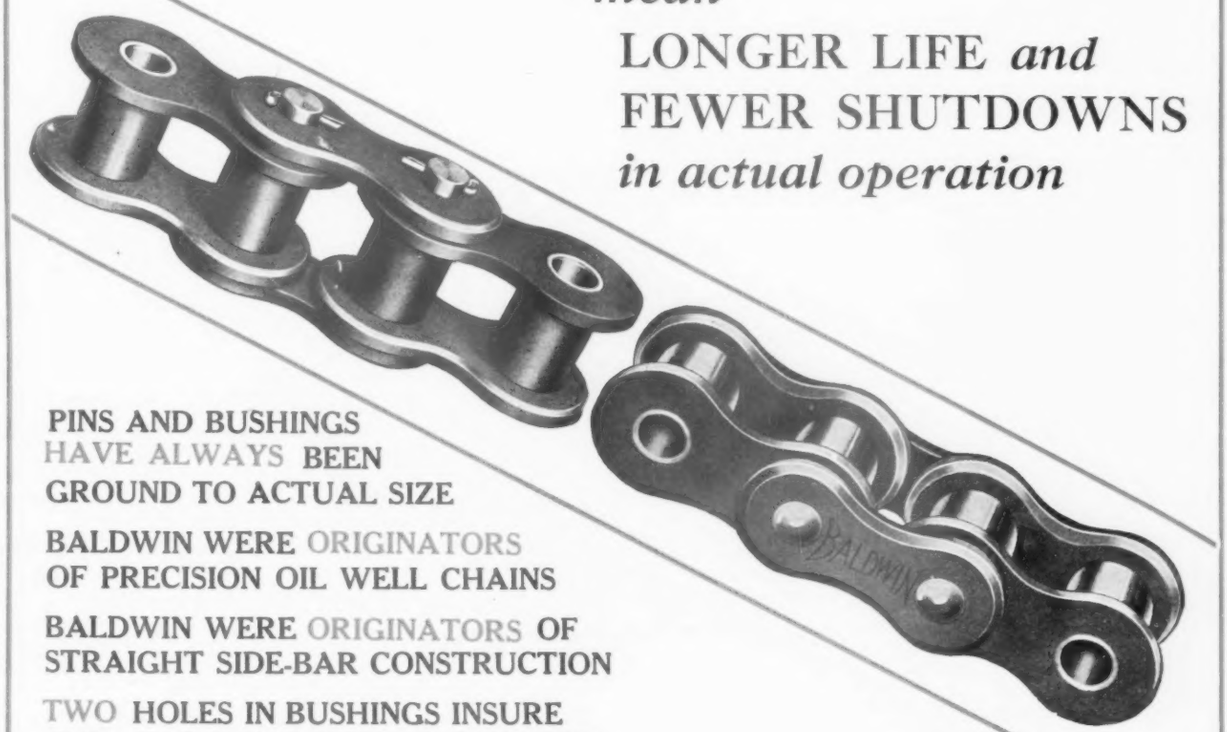

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COMPLETIONS FOR PAST WEEK IN U.S. FIELDS

SUMMARIZED REVIEW OF FIELD RESULTS

State—	Completions This week	Completions Last week	Producers This week	Producers Last week	Gas Wells This week	Gas Wells Last week	Failures This week	Failures Last week	Initial Prod. This week	Initial Prod. Last week
Alabama	..	1	..	..	..	..	..	1	...	..
Arkansas	7	6	5	4	..	1	2	1	435	635
California	21	22	20	22	..	..	1	..	22,850	19,250
Illinois	16	7	13	7	1	..	2	..	638	262
Indiana	1	2	1	2	..	..	..	..	10	80
Kansas	23	20	12	8	..	2	11	10	4,765	2,062
Kentucky	27	26	22	19	..	1	5	6	1,628	2,126
Louisiana	20	22	5	7	3	7	12	8	1,167	2,822
Michigan	9	7	7	7	..	..	2	..	1,290	1,960
Mississippi	1	..	..	..	..	..	1	..	...	..
New York	..	4	..	4	..	..	..	..	...	10
Ohio	66	53	29	25	22	14	15	14	1,233	361
Oklahoma	77	60	35	37	13	6	29	17	19,510	58,324
Pennsylvania	3	59	..	57	3	2	..	..	...	141
Texas	137	167	62	78	8	17	67	72	29,805	135,846
West Virginia	27	21	12	7	11	11	4	3	70	97
Total	435	477	223	284	68	61	181	132	83,401	223,976
Increase this week	..	..	..	..	8	..	49	..	...	...
Decrease this week	42	..	61	..	..	..	..	..	140,575	...

CALIFORNIA

Company, Well and Location	Initial Production Bbls.	Depth
BELRIDGE—		
Ohio Oil Co., 23	25	5010
HUNTINGTON BEACH—		
Rex Oil Co., 14	250	4890
INGLEWOOD—		
Standard Oil Co., L. A. I 1-61	200	1820
KERN FRONT—		
General Pet. Corp., Wetmore 8	175	2005
Young 10	150	2050
LONG BEACH—		
Dabney-Johnston Oil Corp., 41	850	5780
Hancock Oil Co., Signal 20	1800	4317
Signal 24	300	6675
Rawco, Inc., Lewis 1	200	6765
Richfield Oil Co., Lekas 3	100	7145
MARICOPA FLATS—		
Standard Oil Co., Fee 7-9-K	2200	3740
MT. POSO—		
Pacific Western Oil Co., King 5	200	1600
RICHFIELD—		
Continental Oil Co., Stern 1	150	4625
SANTA FE SPRINGS—		
George F. Getty, Inc., 26	9000	7985
Shell Oil Co., G. H. N. 22	2400	7835
Slusher 13	2100	7840
Slusher 17	600	8075
Standard Oil Co., Walker 16	150	8140
Weisel 18	1300	7993
VENTURA—		
Associated Oil Co., Lloyd 100	700	7960

OKLAHOMA

Completions

Company, Well and Location	Initial Production Bbls.	Depth
CADDO COUNTY—		
Magnolia, Rowe 2, nw ne ne, 36-6n-10w	915	3280
CARTER COUNTY—		
Magnolia, Hightower 1, sw ne 30-1s-3w	950	2834
COTTON COUNTY—		
Shasta, Patterson 1, se nw, 1-2s-10w	50	2250
Shasta, Slogan 6, ne nw ne ne, 2-2s-10w	200	2179
Wirt Franklin, Powell 1, se nw, 35-1s-10w	15	2175
Baldwin and Sultan, Rhone 4, sw se se, 35-1s-10w	160	2204
Silurian, et al, Chambers 3, se ne nw 2-2s-10w	*	2258
CREEK COUNTY—		
The Texas Co., Jackson "B" 1, se sw nw, 25-19-8e	30	2398
Magnolia, Vance 6, sw nw ne, 7-18-7e	15	2574
Jackson and Wise, Grayson 1, ne se se, 20-18-9e	¶3	2849
R. O. Bailey, Fulsom 7, cwl nw sw, 13-17-10e	40	1925
Texas Pacific Coal & Oil, Beaver 8, sw nw nw 17-16-9e	5	2678
Texas Pacific Coal & Oil, Beaver 9, nw sw nw, 17-16-9e	10	2673
Silurian, et al, Schmidt 1, ne nw sw, 25-15-9e	*	3830
E. L. Kistler, Bear la, ne se nw, 16-14-10e	*	3390
HUGHES COUNTY—		
Independent, Walker 1, c sw nw, 12-7-8e	¶40	2897
KAY COUNTY—		
Parrish et al, Whiteside 4, c ne sw, 25-28-1w	*	970
LOGAN COUNTY—		
Wentz, Williams 2, nw ne, 31-19-4w	1800	5953
Shell, Storey 1, se sw, 30-19-4w	1870	5946
MUSKOGEE COUNTY—		
H. L. Jolly, Townlot 2, nw ne sw nw 35-15-18e	*	1112
Troutt Drlg. Co., Friday 2, ne se sw, 8-15-15e	15	1663
Paul and Morgan, Sango 4, c ne nw, 17-15-17e	¶3	1407
Wilson and Barnes, Kelly 1, sw nw sw, 13-13-18e	¶½	477
Bement Oil Co., Bruner 1, (owdd) cnl ne se, 15-13-16e	¶6	1907
NOBLE COUNTY—		
Sinclair, Waltermire 1, nw se, 33-21-1w	¶11	3418
Magnolia, King 1, se sw, 26-20-1w	*	5410
Gypsy, Daily 1, se nw ne, 24-22-1e	*	5053
OKFUSKEE COUNTY—		
Mid-Continent, Dindy "B" 4, nw sw ne, 31-11-11e	150	3025
Betty-Ann, Harjo 1, nw se, 5-12-11e	*	2970
Barnsdall, McKinney 1, nw se, 18-10-11e	*	3695
W. L. Umburn, Barnett 2, sw nw se nw, 3-10-11e	*	1670
OKMULGEE COUNTY—		
Lowery, Harris 14, nw ne, 26-13-14e	*	1946
OSAGE COUNTY—		
J. A. Presbury et al, 3, se ne ne nw, 35-24-8e	*	750
Indian Territory Illuminating, 418, ne sw se, 20-23-8e	¶2½	1145
Barnsdall, et al, 6, nw ne se, 22-22-11e	10	1638
Indian Territory Illuminating, 417, sw se sw nw, 8-24-9e	¶3	747
R. L. Berlin, 11, sw ne sw, 20-29-9e	10	1583
PAYNE COUNTY—		
Shaffer, Echo Hawk 2, nw sw ne, 4-18-5e	755	3476
PITTSBURGH COUNTY—		
Colton and Lester, Gumm 1, ne se se, 10-7-18e	¶27	1847
PONTOTOC COUNTY—		
Superior, Maulden 5, sw nw, 32-5-5e	130	2655
Benedum and Tress, Mole 6, sw nw ne, 31-5-5e	500	2651
Homa Okla Oil Co., Shields 1, nw se nw, 33-5-8e	¶2	1492
POTTAWATOMIE COUNTY—		
Indian Territory Illuminating, Weldfelt 2, nw ne nw, 2-7-4e	1050	3943
Indian Territory Illuminating, Weldfelt 1, ne nw, 2-7-4e	80	4007
Pierce, Sanders 1, (owdd) nw sw, 20-7-4e	11	4219
Magnolia, Tarter 2, nw sw, 15-7-4e	2850	4289
Magnolia, Risenhoover 4, se ne, 14-7-4e	25	4240
Shell, Hines 2, se sw nw, 22-7-4e	¶10	3798
Independent, et al, Curly 2, sw se nw, 22-7-4e	¶14	3650
Empire, Smith 3, ne se ne, 8-8-5e	600	4050
Tidal, et al, Sanders 1, se nw, 27-7-4e	*	4526
Phillips, Cherry 3, sw ne ne, 25-7-4e	*	4300
Cal Cul Oil Co., Wilson 1, nw ne nw, 9-8-3e	*	5490
Sunray, et al, Bourbonnais 1, ne, 28-7-5e	*	4310
SEMINOLE COUNTY—		
Sinclair, Jefferson 4, se nw se, 23-5-7e	625	4240
Sinclair, Jefferson 3, sw ne se, 23-5-7e	500	4165
Sinclair, Phillips 7, se, 5-7-7e	2250	4212
Empire, Cluck 13, se ne, 11-8-5e	15	4486
Carter, Rogers 2, nw sw se, 2-8-5e	2725	4225
The Texas Co., Mayhue 4, ne nw, 14-9-6e	625	4226
Carter, Shepherd 2, sw ne ne, 6-9-6e	105	4320
Carter, Shepherd 1, ne, 6-9-6e	100	4307
Burke-Greis, et al, Varnum 1, sw, 32-10-6e	319	4340
Indian Territory Illuminating, Fleet 1, nw se, 13-6-7e	*	4748
Gypsy, et al, Conner 1, sw nw se, 20-7-6e	*	4425
Amerada, Marks 1, sw ne, 32-10-6e	*	4430
Indian Territory Illuminating, et al, Chatkey 1, sw ne, 12-10-6e	*	4793
STEPHENS COUNTY—		
E. Parsons et al, Dilly 1, sw se sw, 22-2s-7w	*	2269
Pace et al, Andrea 1, ne, 24-2s-8w	*	2311
Beaver, Funk 2, csl n½ ne sw, 30-1n-8w	*	2302
TILLMAN COUNTY—		
Riley et al, Riley 1, nw sw, 34-4s-14w	*	2213
TULSA COUNTY—		
Glidden, 1, ne se ne, 4-19-10e	*	2197
Union Drlg. Anthis 1, ne nw ne, 13-19-10e	*	1855
Superior, Johnson 2, se ne nw, 18-19-12e	*	2445
WAGONER COUNTY—		
O. F. Webb et al, Smith 2, ne sw, 6-16-16e	*	1630
Cherokee Public Service, Marshall la. (owdd) sw ne se, 35-16-17e	*	896
C. F. Finefield, Barnett 3, cnl sw ne, 34-18-17e	¶3¼	305

KANSAS

Completions

Company, Well and Location	Initial Production Bbls.	Depth
BUTLER COUNTY—		
Empire Refining & Oil, Cranston 12, se ne se, 22-27-5e	200	2760
Wentz Oil Corp. et al, Getter 1, nw ne se, 6-28-6e	*	3174
Morgan et al, Henson 1, se nw, 8-26-7e	*	3154
Milmac, Clearwater 1, sw, 33-25-3e	*	3255
ELK COUNTY—		
Union Gas Corp. et al, Ware 1, c ne ne, 5-31-9e	*	1877
Croft and Frazier, Woodward 1, c nw nw, 32-30-11e	*	2000
ELLIS COUNTY—		
Thomas and Moncreif, Strailing 1, nw se, 9-13-19w	175	3603
GREENWOOD COUNTY—		
Phillips Pet. Co., Beal 5, se ne ne, 28-23-11e	80	1929
McPHERSON COUNTY—		
Shell, et al, Rasmussen 1, (owdd) sw, 8-18-3w	*	3725
Gardner Pet. Co., Benson 1, (owdd) c nw sw, 32-18-2w	25	2964
Shell, et al, Chinberg 1, c nw nw, 18-19-2w	10	3000
Slick Pryor and Lockhart, Gratton 1, ne nw nw, 34-20-3w	255	3108

Company, Well and Location	Initial Production Bbls.	Depth
SEDGWICK COUNTY—		
Shell, Lygrisse "B" 4, se nw sw, 15-26-2e	*	2923
Graham Bros. Baker 1, ne sw sw, 15-26-2e	*	2970
Boyle and Woods, Sandusky 1, nw ne se, 34-26-1w	*	3510
Plains et al, Curry 1, se sw sw,2-27-1w	170	3401
Shell et al, Wilson 1, nw sw se sw, 15-26-2e	100	2929
Shell Pet., Erdwien 1, sw sw sw, 11-26-2e	1290	2860
Wentz, Bright 4, sw se nw, 1-26-1w	900	3367
Skelly, et al, Wilson 14, nw ne, 1-26-1w	200	3375
Bu Vi Bar, et al, Hudson "A" 1, se sw ne, 12-26-1w	1360	3448
SUMNER COUNTY—		
Laredo Oil Co., Welch 1, sw se, 9-34-1e	*	800
Mil-Continent Pet., Clark 1, se, 31-34-3w	*	4870

EASTERN STATES

PENNSYLVANIA

Company, Well and Location	Initial Production Bbls.	Depth
GREENE COUNTY—		
Carnegie Natural Gas Co., Bowers 3	¶2	....
Fordyce, 2	¶1½	....
Neill, 2	¶1½	....

WEST VIRGINIA

Company, Well and Location	Initial Production Bbls.	Depth
RITCHIE COUNTY—		
John Hammond & Co., Woodward 1	¶¼	....
Hudson-New York Pet. Co., Cummitt, 1	2	....
Hudson Oil Co., C. Cummett 2	5	....
A. C. Woodard, Layfield 2	*	....
C. B. Smith, Bradley 1	15	....
Edwin D. G. Lyney, Storrs 12	2	....
Majestic Oil Co., McFarland 1	2	....
GILMER COUNTY—		
Carnegie Nat. Gas Co., Matheney 1	15	....
Chartiers O&G Co., Stump 3	¶2	....
Alfred Ellis & Co., Fling 1	*	....
CALHOUN COUNTY—		
C. S. Morris & Co., Versey 1	¶2	....
F. F. McIntosh & Co., Sapp 2	¶1½	....
United Fuel Gas Co., Hathaway 3996	¶1¼	....
BOONE COUNTY—		
Mountain State Fuel Co., Stollings 1	¶1¼	....
Cameron O&G Co., Stone 1	¶1½	....
Owens Bottle & Machine Co., Powell 2	¶1½	....
ROANE COUNTY—		
Virginian Gasoline & Oil Co., Hunt 6	15	....
South Penn. Oil Co., Nixon 12	5	....
LEWIS COUNTY—		
McCall Drilling Co., Smith 1	*	....
Chapman & Bennett, Hoover 1	*	....
KANAWHA COUNTY—		
Virginia Gasoline & Oil Co., Brown 15	15	....
CLAY COUNTY—		
H. B. Davenport, Thompson Land & Coal Co., 1	5	....
WIRT COUNTY—		
Ray Evans & Co., Courtney 1	2	....
PLEASANTS COUNTY—		
Adam Ward & Co., Varner 18	2	....
LINCOLN COUNTY—		
Cecelia O&G Co., Croft Land Co., 2	¶¼	....
CABELL COUNTY—		
W. V. Gas Co., Morrison 1	¶1	....
TYLER COUNTY—		
Local Oil Co., Spencer 1	¶¼	....

KENTUCKY

Company, Well and Location	Initial Production Bbls.	Depth
MUHLENBERG COUNTY—		
Ellis & Young, Duke 1	*	1763
WAYNE COUNTY—		
J. F. Frank, Morgan 1	*	....
Marsh Bros., Risner 1	*	....
LEE-OWSLEY COUNTIES—		
Superior Oil Corp., Trabue 2	5	....
Trabue 1	5	....
HENDERSON COUNTY—		
Whitmer O&G Co., Crofton 1	75	....
Clark 1	30	....
DAVIESS COUNTY—		
Johnson & Young, Beard 1	100	....
Creek Drilling Co., Hamilton 3	60	....
MAGOFFIN COUNTY—		
Hupp, Duff & Co., Literal 2	5	....
Pittsburgh Trust Co., Wheeler 10	5	....
Magoffin Oil Corp., Williams Hrs. 3	3	....
OHIO COUNTY—		
Hupp & Duff, E. Bartlett 13	150	....
C. Bartlett, 14	300	....
C. Bartlett, 15	400	....
Whittaker, 1	30	....
Rex-Pyramid Oil Co., Hoover 12	*	....
Hoover, 13	150	....
Fred Weir & Co., Norris Hrs. 10	30	....
Norris Hrs. 11	35	....
Norris Hrs. 12	50	....
Leeper Oil Co., Westerfield 2	5	646
Chester Oil Co., Medcalf 7	80	721
Cumberland Pet. Co., Hamilton 20	50	....
Thompson & Tremor, Roach 1	15	586
Jas. C. Ellis & Co., Burdette 1	20	....
Mosley 10	25	....
Ralph 7	*	....

SOUTHEASTERN OHIO

Company, Well and Location	Initial Production Bbls.	Depth
MONROE COUNTY—		
Henry Berger, Riley Hrs. 6	15	....
Payne & Swarthout, Shumacher 1	2	1640
Sylvania Producing Co., Kinsey 18	4	1731
Woodsfield Oil & Gas Co., Lambatus 6	¶¼	1924
MORGAN COUNTY—		
Ohio Fuel Gas Co., Best 1	¶¼	1599
Williams Bros., Ellis 5	¶¼	820
Dover Oil Co., Harkins 32	¶¼	1573
WASHINGTON COUNTY—		
Wickers & Co., McIntyre & Perdew 1	1	1238
Henderson Oil Co., McEvoy 7	*	1355
NOBLE COUNTY—		
McGarry O&G Co., McGarry 1	*	1373

CENTRAL OHIO

Company, Well and Location	Initial Production Bbls.	Depth
MEIGS COUNTY—		
Southern Ohio Petroleum Co., Carnahan 1	*	688
H. F. McTaggert & Co., Saxon 1	*	777
Willock & Co., 1	*	774
Bowman & Deem, Jewett 1	*	....
W. N. Hovis & Co., Cooper 1	6	1710
ASHLAND COUNTY—		
Ohio Fuel Gas Co., Stiner 1	¶½	....
Cowan, 1	¶½	....
Hassinger 2	¶¼	....
McIntyre & Co., Gardner 3	2	722
Mohican O&G Co., Chesrown 7	¶¼-7	569
SUMMITT COUNTY—		
East Ohio Gas Co., Daily 2	¶½	4122
Harring 1	¶2	4122
F. A. Brendall & Co., Kerr 1	¶¼	3528
Geo. Eagon, Pille 1	¶3	4028
WAYNE COUNTY—		
Faulkner & Co., Snyder 1	¶¼	617
B. Slagel, Mark 4	*	575
Harmon & George, Martin 1	¶1¼	3054
Preston Oil Co., McClain 2	135	2994
Pure Oil Co., L. McKee 2	124	3075
GUERNSEY COUNTY—		
East Ohio Gas Co., Quillan 2	90	3469
Gray 2	95	3500
HOLMES COUNTY—		
East Ohio Gas Co., Pyers 1	30	3349
Ohio Fuel Gas Co., Schrock 1	¶¼	....
LICKING COUNTY—		
North Fork Oio Co., Williams 9	30	768
McClay Bros., Hoover 3	¶¼	2874
MEDINA COUNTY—		
Oko O&G Co., Sanford-Watson 30	10	....
East Ohio Gas Co., Jalensics 9	5	....
ATHENS COUNTY—		
Ohio Fuel Gas Co., Beasley 1	¶1	1569
Kiggins & Co., Dean 4	¶½	1342
SCIOTO COUNTY—		
Wagner & Matthews, Herr & Adams 1	*	1200
Browning Bros., Caudill 1	*	1308
MUSKINGUM COUNTY—		
Pure Oil Co., McKee 2	135	....
KNOX COUNTY—		
Ohio Fuel Gas Co., Severns 3	¶3	....
BELMONT COUNTY—		
Frank Stranges & Co., Shepherd 3	¶¼	998
PERRY COUNTY—		
Preston Oil Co., Lazalere 2	¶1½	3438
LORAIN COUNTY—		
Ohio Fuel Gas Co., Pjor 1	*	....

INDIANA

Company, Well and Location	Initial Production Bbls.	Depth
ADAMS COUNTY—		
Rosenthal & Co., Bollenbacher Hrs. 1	10	....

NORTHWESTERN OHIO

Company, Well and Location	Initial Production Bbls.	Depth
WOOD COUNTY—		
Just Oil Co., Hoffheims 1	*	1750
Glass & Shellberger, Bowman 1	*	....
Geo. W. Hoffman & Co., Reitzel 1	12	....
SANDUSKY COUNTY—		
M. C. Richards & Co., Waggoner 8	20	1334
Melvin Good, Nye 1	*	1286
HANCOCK COUNTY—		
J. M. Steen & Co., Deeds 29	50	1405
LUCAS COUNTY—		
Waterville G & O Co., Hutchinson 2	¶¼	1215
SENECA COUNTY—		
J. H. Murphy & Son, Sibrel 1	¶¼	....

ILLINOIS

Company, Well and Location	Initial Production Bbls.	Depth
ST. CLAIR COUNTY—		
Majestic O&G Co., Rittman, Arsenal Island 1	2	675
Ohio Oil Co., Dyroff 18	300	533
Jim McPeak, Lindemann 2	40	543
John Gorman & Co., Thielman 1	25	751
Robinson & Co., Thielman Hrs. 1	*	580
CRAWFORD COUNTY—		
H. D. Barker & Co., Mann 1	¶1	1508
Silurian Oil Co., Liston 7	8	1094
Ohio-Dinsmoor Oil Co., Tohill 11	Pres.	945
O. R. G&O Co., Gray 1	50	945
Associated Producers Co., Dees 6	5	....
Watson & Co., Newlin 2	10	973
Ohio Oil Co., Drake 30	2	....
WABASH COUNTY—		
J. D. Toomey & Co., Litherland 8	132	1572
Coon Creek Oil Co., Biehl 6	22	1472
J. S. Young, Jr., & Co., Fox 7	20	1368
LAWRENCE COUNTY—		
Ohio Oil Co., Gillespie 8	24	1797
Phipps & Co., Wright 1	*	1701

MICHIGAN

Company, Well and Location	Initial Production Bbls.	Depth
ISABELLA COUNTY—		
Sias Dev. Co., Brown 2	400	3592
Pure Oil Co., State B-2	300	....
Chippewa O&G Co., Joslyn 5	155	....
Brown Oil Dev. Co., Mitchell 1	*	3593
MUSKEGON COUNTY—		
Nelson & Witt, G. Feuner, B-2	200	2059
Johnson O&R Co., Thompson 16	150	2057
Muskegon Oil Corp., Danilof 8	60	1887
Neely, Foster & Senn, Buteau 1	25	2028
NEWYAGO COUNTY—		
Uhl & Sarved, Uhl 1	*	3500

NORTH LOUISIANA

Company, Well and Location	Initial Production Bbls.	Depth
CADDO PARISH—		
W. D. Chew, Levee Board B-2, 34-21-16	25	1830
Shreveport Oil Corp., S. A. Guey et al 1, 32-21-15	sw	2300
Snake Creek Oil Co., Levee Board 1, 9-21-16	sw	2328
MOREHOUSE PARISH—		
Magnolia Pet. Co., U. S. A. 5, 29-21-5e	¶7	2363
OUACHITA PARISH—		
Greenwood Prod. Co., Phillips 3, 18-19-4e	¶3	2184
J. Sandidge, Montgomery 1, 18-18-5e	¶12	2233
SABINE PARISH—		
Bridges-Clark Oil Co., Williams 2, 33-10-12	487	3224
UNION PARISH—		
Bahan & Bahan, Parks 2, 2-20-3e	inked	1885

ARKANSAS

Company, Well and Location	Initial Production Bbls.	Depth
OUACHITA COUNTY (Smackover)—		
Sure Oil Co., Snyder 2, 34-15-15	25	1965
Sinclair O&G Co., Berry 11, 33-15-15	185	2017
Sinclair O&G Co., Berry 13, 33-15-15	40	2013
Texas Co., M. J. Avera 1, 35-15-15	35	1999
UNION COUNTY (Smackover)—		
Marine Oil Co., Hays 7-A, 4-16-15	150	2362

EAST TEXAS

Company, Well and Location	Initial Production Bbls.	Depth
PANOLA COUNTY—		
Magnolia Pet. Co., Adams 3, Jas. Matthews sur	*	2850
Texas Co., Brumble 7, Mitcheson sur	¶1	2348

TEXAS

SOUTHWEST TEXAS

Company, Well and Location	Initial Production Bbls.	Depth
BEXAR COUNTY—		
F. Lefevre, Schwartz	*	640
CALDWELL COUNTY—		
Harrasch et al, Dzinzouski 1, Isaac Allen sur	*	1518
Neuman et al, B. F. McConnell 1, 4 mi s Dale	*	1981
DUVAL COUNTY—		
G. M. Partee, Moody 6, Govt. Wells	75	2361
S. & O. Oil Co., Hahl 7, Govt. Wells	25	2536
Humble, Kohler 35, Kohler Ranch	¶25	1789
Houston Oil Co., Peters C-1	¶25	1790
GONZALES COUNTY—		
Crown Pet. Co., Hattenbach 1, Jas. Jones sur.	*	3016
Empire, Norwood 1	*	4169
GUADALUPE COUNTY—		
Sinclair, Koppe 1, Wm. Scott	*	2131
MAVERICK COUNTY—		
Ryan Consolidated Pet Co., Indio Ld & Cattle Co., 2, Antonio Rives sur	*	5661
Rycade Oil Corp., Sullivan 4, I. & G. N. Blk. 7, Sec. 112	*	5795
NUECES COUNTY—		
Agua Dulce O&G Co., Kerr 2	¶50	2032
Sanders 2	¶40	1979
WEBB COUNTY—		
Houston Oil Co., Benavides D-20	75	2351
ZAPATA COUNTY—		
Killam & Duggan, Cuellar 9, W-W-F. pool	800	1594
ZAVALLA COUNTY—		
Tex. Fuel & Gas Co., West 1	*	1302

EAST CENTRAL TEXAS

Company, Well and Location	Initial Production Bbls.	Depth
FALLS COUNTY—		
Killam & Phillips, Jones 4	*	1630
HILL COUNTY—		
Harper & Starkey, Reynolds 1	20	667
LEON COUNTY—		
Reiter et al, Busby 1, Maria d la Conception, Marquez gt	*	3014
MILAM COUNTY—		
Tex. Pet. & Dev. Co., Phillips 1, Thos. Chambers sur	*	3712

TEXAS GULF COAST

Company, Well and Location	Initial Production Bbls.	Depth
BARBERS HILL—		
Sun Oil Co., Wilburn 1	1300	5350
BLUE RIDGE—		
Gulf, L. W. Luscher 17	*	4200
RACCOON BEND—		
Humble-Valley, Deutrich 6-A	185	3320
McCasland 1	450	3120
SOUTH DAYTON—		
Rio Bravo Oil Co., Wilcox 1	*	1190
SUGARLAND—		
Humble, Brazos Farms 8	450	3674
Hagenson 1	40	3811
SOUTH LIBERTY—		
Sun Oil Co., Mitchell 50	100	3542
Empire G. & F. Co., Groggan 7	*	2590
ORANGE—		
Sun Oil Co., Gallier 5, wo	10	3502
SPINDLE TOP—		
Yount-Lee Oil Co., Gladys City 95	*	3535
McFaddin 74, wo	540	3310
HULL—		
Gulf, Phoenix Dev. Co. 56, dd	110	3470
Republic, Dolbear 35, dd	*	4590
HUMBLE—		
The Texas Co., G. W. Dunman 1	8500	4956
South Texas Pet. Co., Morris 11	3500	5339
Humble, Williams 4	250	4347
LA BELLE (Jefferson Co.)—		
Vacuum, Broussard & Hebert 1, 9 mi se Fannett	*	5673
LONG POINT—		
Gulf, Trone 12	*	6300
MYKAWA—		
Humble, Siadous 1	¶25	3453
REFUGIO—		
Houston Gulf Gas Co., Fannie Heard 8	¶40	3685
Mission Drlg. Co., Shelly 3	120	3683
Kuykendall 1	250	3671
Sun Oil Co., Leisering 2	300	3703

TEXAS PANHANDLE

Company, Well and Location	Initial Production Bbls.	Depth
CARSON COUNTY—		
Herrogan Oil Co., McConnell 1	Junked	2925
Ryan Consolidated Pet. Corp., Blk. 5	300	3094
The Texas Co., J. L. Noel 2	120	3291
GRAY COUNTY—		
Magnolia Pet. Co., J. E. Wright 2	425	2787
McMan O&G Co., Wm. Jackson 3	900	3015
Sun Oil Co., Purviance 4	1,700	2960
HUTCHINSON COUNTY—		
Mid-West Explo. Co., C. R. Garner 1	230	3122
C. R. Garner 2	250	3108
Travelers Oil Co., C. Cockrell 2	65	3039

WEST TEXAS

Company, Well and Location	Initial Production Bbls.	Depth
CRANE COUNTY—		
Gulf Prod. Co., J. T. McElroy 67	345	2965
HOWARD COUNTY—		
Continental Oil Co., Kloh 4	1,200	2230
PECOS COUNTY—		
Continental Oil Co., University 5-A.	740	972
Gulf Prod. Co., M. A. Smith 21	1,800	1770
Landreth Prod. Corp. & World Oil Co., University 4-B	2,550	1635
UPTON COUNTY—		
Gulf Prod. Co., Hughes 2-B	75	2314
T. P. Coal & Oil Co., & Humble, Shirk 1	400	2497
WINKLER COUNTY—		
Gulf Prod. Co., Daugherty 2-B	*	3111

CENTRAL WEST TEXAS

Company, Well and Location	Initial Production Bbls.	Depth
COLEMAN COUNTY—		
Magnolia Pet. Co., J. P. Morris 23	*	2392
BROWN COUNTY—		
Beasley et al, Dabney 1	*	1660
Bowers et al, Giddings 2	5	1557
Gully et al, Armstrong 1	*	1460
Humble, Carter 1	60	1292
Kilgore 9-A	40	1158
Murray et al, White 1	*	1203
Paramount Oil Royalties, Robbins 1	*	955
Willis 1	*	1425
COLEMAN COUNTY—		
May et al, Brooks 1	*	1410
Permian Oil Co., Crowder 5	*	2060
White Eagle, Morris 32	250	2034
EASTLAND COUNTY—		
Hoffman & Page, Lyerla 3	20	1290
Lobaugh et al, Kincaid 1	¶2	1658
Warner-Quinlan Co., Stamps 1	*	3756
SHACKLEFORD COUNTY—		
Callihan & Carter, Hatcher 1	*	1005
Eagle Bros., Matthews 5-A	*	1260
Phil French et al, Dawson 2	*	1745
Frizzell & Smalley, Alexander 2	15	896
Moutray Oil Co., Nail 2	*	808
Tannehill et al, Matthews 6	190	1159
Van Zandt & Eldridge, Doson 2	*	710

NORTH TEXAS

Company, Well and Location	Initial Production Bbls.	Depth
ELECTRA—		
Cooper & Mishler, Waggoner 15	15	1539
Golding & Cochran, Waggoner 1-B.	20	1436
Merrick Drlg. Co., Fisher 1-D	*	2000
K-M-A & IOWA PARK—		
Arkansas Fuel Oil Co., K. & K. 22-A	80	1203
ARCHER COUNTY—		
Burns et al, Wilson 2-P	*	1465
Roy Carter et al, Scott 1	*	1257
Jack Clark et al, Cowan 1	*	1062
Cullum et al, Falls 1	40	1133
Key & Leath, Logan 1	*	1253
Madden & Stump, Vernon 1	*	1205
Petroleum Producers Co., et al, Kimkel 13-B	20	1144
Stump et al, Moss 1	*	1805
BAYLOR COUNTY—		
Consolidated Oil Co., Portwood 2	45	1416
CLAY COUNTY—		
Texas Dev. Co., Boddy 1	*	2307
COOKE COUNTY—		
Danciger O&R Co., Huggins 15	70	1112
Kewanee O&G Co., Pembroke 1	*	1702
Russell et al, Marshall 1	*	2190
GRAYSON COUNTY—		
Biltmore Oil Co., Taylor 1	*	763
JACK COUNTY—		
F-H-E Oil Co., Daugherty 4	30	3165
Hiland Oil Co., Raley 1	80	3153
Huffmans & Leidecker, Kuykendall 1	*	3220
Osage Oil Corp., Newman 1	*	3674
Shaw Oil Co., Ezell 2	*	2617
MONTAGUE COUNTY—		
Arco Oil Co., Salmon 1-D	40	1010
Barnsdall Oil Co., Cunningham 2	30	929
Bridwell Oil Co., Edmondson 10	90	1261
WILBARGER COUNTY—		
Cosden Oil Co., Waggoner 4-C	*	2675
Empire G & F Co., Waggoner 15-A.	60	1864
Waggoner 24-B	115	2298
Waggoner 9-C	*	2617
Shaw Oil Co., Waggoner 1-H	*	2403
Simpson Fuel Oil Co., Waggoner 4-A	125	2672
Waggoner Ref. Co., Waggoner 12-J	90	2392
YOUNG COUNTY—		
Goldsmith & King, Royalty, Kunkel 4	*	1171
Gose & Waggoner, Inman 1	*	653
Holbrook & Woods, Dean 6	*	550
Madden & Hunt, Kinkel 2	*	1177
Nicks & Stump, Bailey 1	25	880
Panhandle Ref. Co., Prideaux 4-D.	*	733
Parks et al, Cullers 2	20	573
Reed & Wooten, Fisher 1	*	750
Smith, Chandler et al, Loftin 1	*	738
United Producers Co., Kunkel 3	*	1174
Wise & Jackson, Cullers 4	15	593
Wolf et al, Hill 1	25	1034

SOUTH LOUISIANA

Company, Well and Location	Initial Production Bbls.	Depth
ABBEVILLE (Vermilion Parish)—		
Atlantic O. P. Co., A. Boudoin 1, Sec. 68-12s-3e	*	5017
BAYOU BOUILLON—		
Rycade-Humble, State 3, Sec. 13-9s 8e	*	3673
BELLE ISLE—		
La. Land & Explo. Co., C. A. Barbour 1	*	1225
THIBODAUX—		
Gulf, Stark 14-A	*	1480
ANSE LA BUTTE—		
Yount-Lee Oil Co., La. Pet. Co. 5	*	5430
BAYOU BLUE—		
Standard, Schwing 2, Sec. 74-9s-10e	450	3600
BLACK BAYOU—		
Shell, Watkins 13, Sec. 18-12s-12w	*	1250
VINTON—		
Gulf, J. W. Gardiner Est. Fee 1	130	3225

Parker Gets Extension on Federal Lands Leases

Casper, Wyoming.—It has been announced recently that H. Leslie Parker, representing a group of permittees holding acreage on the Midway and Geary domes, has been granted extensions on about 30,000 acres of federal lands, on the Midway, the Geary, and the North Geary domes. The Saltmount Oil Company of Denver, it is said, will start a test soon on one of these structures and will drill to 7000 feet if necessary.

The Continental Oil Company started a well on Geary dome several years ago, plugged and abandoned it, and then about two years ago returned to deepen it to horizons believed potential. However, the job of cleaning out the hole was never completed, and the test was reabandoned. Midwest Refining Company drilled a test to about 4700 feet several years ago on Midway dome, and then abandoned it.

Neither test, in the light of current information, was deep enough to tap the possible production.

Wilcox Sand Showing In Okfuskee County Pool

Tulsa.—The first Wilcox sand showing found in the Josey pool, Okfuskee County, Oklahoma, opened last summer, is the Independent Oil & Gas Company's Jacobs 1, SW NW Section 22-12-11e, which is drilling in the Wilcox sand at 3457 feet, with 1000 feet of oil in the hole.

PERMITS GRANTED FOR NEW WELLS

CALIFORNIA

BELRIDGE—The Ohio Oil Co.'s 33, 30-28-21.

McKITTRICK—H. L. Whiston's Whiston 1, 30-30-22

MONTEREY COUNTY—Pacific Inland Oil Co.'s 1, 19-23-15.

MT. POSO — Petroleum Securities Co.'s Glide 18, 21-27-28.

SANTA FE SPRINGS — Bell View Oil Synd.'s Santa Fe 4, 6-3-11.

SANTA MARIA—Shell Oil Co.'s Careaga A-1, 31-9-33.

SEAL BEACH—Continental Oil Co.'s McGrath and Selover 23, 3-5-12.

SUNSET — North American Oil Cons, Kerckhoff 2, 8-11-23.

SACRAMENTO COUNTY — Sacramento Petroleum Co.'s Meiss 1, 28-7-8.

REHAMA COUNTY — Crockett Drilling Synd.Inc.'s 1, 20-24-5.

VENTURA—Shell Oil Co.'s Taylor 53, 28-3-23.

KANSAS

COFFEY COUNTY—Darby Pet., Scott 1, se nw, 13-23-14e. Prairie 1, sw ne, 13-23-14e. Selby, Scott 1, ne sw 13-23-14e. Young et al, Lenring 1, se nw 11-23-14e.

EDWARDS COUNTY—Skelly, Johnson 1, ne sw 21-26-17w.

ELK COUNTY—Ramsey et al, Denton 1, nw ne nw 10-31-8e. Empire et al, Record 1, sw se se 32-30-10e. Minnehoma et al, Denton 2, (owdd) nw sw sw 3-31-8e.

McPHERSON COUNTY—Dixie, Johnson 1, sw 20-17-3w. Derby Oil Co., Krehbiel 1, nw ne sw, 34-2013w.

SEDGWICK COUNTY — Fisher & Lauck, Trustee 1, ne sw se 19-27-2e. Gypsy, Hamant 4, nw 14-26-2e. Bu Vi Bar et al, Wright 10, sw se ne 12-26-1w.

SUMNER COUNTY — Laredo, Welch 1a, sw se 9-34-1e. Hatifield et al, Dauber 1, ne 18-30-1w.

OKLAHOMA

ATOKA COUNTY—Brookshire et al, Guinn 1, nw 18-3s-10e.

CARTER COUNTY — Trevelyn, Spigner 1, nw sw nw, 24-1s-3w.

COMANCHE COUNTY — Oklahoma Nat. Gas, Doebel 1, c sw sw 3-3n-9w.

COTTON COUNTY—Shasta, Watkins 1, ne sw 1-2s-10w. Shasta, Slogan 8, csl n½ ne, 2-2s-10w. Razor et al, Chambers 2, cel se sw 35-1s-10w.

CREEK COUNTY—Gled, Reade 1, nw se sw 25-19-8e. Magnolia Pet., Lewis 12, cwl sw 27-17-7e. Comail, Pemberton 6, ne sw nw 8-17-10e. A. B. Ice, Fulsom 10, sw 13-17-10e. H. L. Deadman et al, Sheppard 2, ne se sw 17-17-10e. Transcontinental, Williams 1, nw se, 15-16-9e. Independent, Smith 6, ne sw 15-14-8e.

HUGHES COUNTY — Troutt Drlg. Co., Bird 1a, c nw nw 5-8-7e.

JEFFERSON COUNTY—Roy M. Johnson et al, Briggs 1, sw 36-3s-4w.

KAY COUNTY—Parrish et al, Blazzer 1, sw ne 3-27-2e. DeCamp et al, Van Valkenburg 1, c ne se 25-28-1w.

LINCOLN COUNTY — Magnolia, Benedict 2, ne se nw 7-14-4e. Meade Bros. et al, Meadville, se sw 25-17-3e.

MARSHALL COUNTY — Bilbo Oil Trust Co., Taliaferro 1, se ne se se 14-5s-5e. C. B. Goddard Oil Co., McComas 1, sw 13-5s-5e.

MUSKOGEE COUNTY—John Aggas, Hawkins 3, se nw se 28-16-15e. E. G. Grubbs et al, Robins 1, nw sw ne 26-15-16e. E. Miles et al, Foreman 2, sw nw sw 14-13-18e. C. F. Ray et al, Foreman 2, sw ne sw 14-13-18e. H. D. Johnston et al, Kelly 1, nw se sw 13-13-18s. H. Burke et al, Morris 1, cnl sw nw 24-13-18e.

OKFUSKEE COUNTY—Sunray, Palmer 1, nw sw sw 29-13-12e. Rebold Drlg., Skelton 4, cel sw ne 2-13-12e. Sunray et al, Wilson 2, ne nw sw 22-12-11e. Mid-Continent et al, Dindy "A" 2, sw nw ne 31-11-11e. Eagle Pitcher Oil Co., French 5, se sw nw 17-11-12e. Atlantic Oil Producing, Snell 1, ne sw nw 13-10-11e.

WEEKLY COMPARISON OF NEW WELLS

Following is a condensed table giving a comparison of permits or locations made for new wells during the past year in Kansas, Oklahoma, Arkansas, Louisiana, Texas, California and the Mountain States:

	Week ending Nov. 9	Previous Week	Total this Month	Total this Year	This Week 1928	This Month 1928	1928 Year Total
Arkansas	..	..	..	145	2	9	331
California	11	24	35	1,113	15	41	1,207
Louisiana	26	16	42	803	16	27	680
Kansas	14	28	42	977	17	49	1,032
Oklahoma	75	83	158	3,095	64	181	3,744
Texas	154	213	367	7,621	185	346	8,297
Total	280	364	644	13,754	299	653	15,291

OKLAHOMA COUNTY — Magnolia and Ramsey, Johnson 1, ne sw 35-13-3w.

OKMULGEE COUNTY—Billingslea et al, Chamberlain 1a, ne nw ne 3-14-12e. Simms, Grayson 6, csl se sw, 16-13-14e. Penrod-Thompson and Aiken, Fox 11, csl n½ se nw 22-13-14e.

OSAGE COUNTY—L. G. Stanley, 8, nw se 36-22-8e. Peters Petroleum et al, 2, ne se nw, 28-21-11e. Smith, Leahy et al, 1, sw, 10-25-9e. Sam Goodman, 3, sw ne nw, 12-26-11e. Peters Pet. Co., 1, ne nw, 27-27-11e. Peters Pet. Co. and Producers & Refiners, 4 "A", csl sw, 22-27-11e. Indian Territory Illuminating, 422 se nw nw, 2-28-10e. Winona, 8, csl w½ ne, 20-29-9e.

PAWNEE COUNTY—Foster Pet. Co., Little 7, se nw nw, 6-20-8e.

PONTOTOC COUNTY — Benedum and Trees, Browall 1, se ne nw, 31-5-5e. Benedum and Trees Lowery 3, nw sw, 31-5-5e. Universal Oil, Krueger 3, nw se sw, 25-5-6e. Belchie and Laskey, Oliver 2, nw sw nw 32-5-7e.

POTTAWATOMIE COUNTY — Interocean Oil Co., Coley 2, sw ne se, 24-7-4e. Gypsy, Pappan 1, ne, 29-7-4e. Russell et al, Coley 1, nw se se, 24-7-4e. Minnehoma, Simms 3, (owdd) ne, se, 16-7-4e. Magnolia, Ogle 2, ne se sw, 22-7-4e. Independent, and Mid Kansas Oil & Gas Asher 1, ne, 3-7-4e. Magnolia, Walker 1, ne nw ne, 21-7-4e. Amerada Pet. Smith 3, ne, 8-8-5e. Amerada Pet., Smith 2, sw ne ne, 8-8-5e. Sinclair, Smith 2, nw, 9-8-5e. Magnolia, Peck 1, sw nw, 6-8-5e.

SEMINOLE COUNTY—Magnolia, Parley 2, sw se se 14-5-7e. Sunray, Cully 9, ne sw ne, 18-5-8e. Magnolia, Spillman 2, sw ne ne, 12-6-7e. Gypsy, et al, Bruner 1, ne se nw, 23-8-5e. Carter, Coker 4, ne se sw, 2-8-5e. Carter, Coker 3, nw se sw 2-8-5e. Continental et al, Harjo 1, nw, se, 26-8-5e. Gypsy, Taylor 1, se ne sw, 19-9-6e.

STEPHENS COUNTY—Fossett et al, Dial 1, se nw ne, 18-1s-8w. Douthitt et al, Night 2, se, nw nw, 34-1s-8w. Lewis Hart, Hulhizer 1, nw, sw, 9-1s-8w.

WAGNER COUNTY—Mack Drlg. Co., Lovett 1, c sw se, 25-16-16e.

WOODS COUNTY—Peerless, Cromwell 1, c nw ne, 23-28-16w.

LOUISIANA

BOSSIER PARISH — Goodman-Johnson, Plain Dealing, J. G. Martin 1, 26-23n-12w, 300 ft s and 300 ft e of nw c se. Palmer Corp of La., Shreveport, W. A. Caplis 12, 25-16n-12w, 3400 ft n and 600 ft e of sw c of sec.

CADDO PARISH—Bayou State Oil Corp., Shreveport, Jolley 28, 22-22n-15w, 150 ft w and 500 ft n of se c se ne. Shreveport Oil Corp., Shreveport, Hicks, et al 1, 32-21n-15w, apprx. 680 ft n and 400 ft w of se c ne nw; Hicks, et al 2, 32-21n-15w, apprx. 880 ft n and 660 ft w of se c ne nw. Standard Oil Co. of La., Shreveport, Caddo Parish School Board 4, 16-19n-14w, 272 ft s and 272 ft w of ne c nw.

CALCASIEU PARISH—Gulf Refg. Co., of La., Houston, Lutcher-Moore 16, 19-9s-12w, apprx. 870 ft n and 160 ft w of se c sw.

CAMERON PARISH — Calcasieu Oil Co., Inc., Magnolia Pet. Co. & Union Sulphur Co., Sulphur, Lempke 5, 36-12s-10w, 1113 ft w and 480 ft s of se c of sec 13 in sec 36.

DE SOTO PARISH—R. O. Roy, Shreveport, W. H. Farmer E-1, 5-13n-13w, 660 ft s and 660 ft w of ne c nw. Wm. Sebastian, Tr., Shreveport, Harris Est. 1, 6-10n-13w, 1620 ft s and 1020 ft w of ne c of sec.

MOREHOUSE PARISH—Bahan & Bahan, Shreveport, Feazel 2, 3-20n-4e, 990 ft s and 330 ft w of ne c of sec. Southern Carbon Co., Monroe, U. S. Government 1, 13-20n-4e, 660 ft n and 1839.4 ft w of se c ne ne.

OUACHITA PARISH—Pipes & Mack, Monroe, Burke Est. 1, 6-18n-5e, 654 ft n and 497 ft e of sw c of sec. Sho-Van Gas Prod. Co., Monroe, West Va. 2, 8-18n-4e, 186 ft n and 67 ft w of nw cor of sec 42 in sec 8; West Va 3, 8-18n-4e, 1980 ft s and 1980 ft w of ne c of sec; West Va 4, 7-18n-4e, 1078 ft n and 294 ft w of ne c of sec 49 in sec 7; West Va 5, 6-18n-4e, 2046 ft s and 1795 ft w of ne c se; West Va 9, 5-18n-4e, 1320 ft s and 1980 ft e of nw c of sw.

RICHLAND PARISH—J. T. Austin, Tr., Monroe, B. Singletary 1, 20-18n-7e, 1980 ft n and 660 ft w of se c of sec. International Gas Prod., Inc., Monroe, M. D. Boughton 1, 36-16n-6e, 2640 ft s and 660 ft e of nw c of sec. Richland Prod Co., Shreveport, A. C. Thomason 1, 13-16n-6e, 2475 ft s and 660 ft e of nw c of sec.

ST. MARY PARISH—La. Land & Explo. Co., Houston, Texas, L. L. Clarke 1, T. 16-S-R 12-e, 957 ft s and 439.5 ft w of se c lot 18 in lot 15.

UNION PARISH—Bahan & Bahan, Shreveport, School Board 3, 10-20n-3e, 1120 ft n and 650 ft w of se c of sec. Greenwood Prod Co., Shreveport, G. H. Holloway 1, 1-21n-3e, 3333 ft e and 660 ft n of sw c sec. Interstate Natl. Gas Co., Monroe, Fee 24, 23-20n-3e, 1980 ft n and 660 ft w of se c sw; Fee 25, 23-20n-3e, 660 ft n and 660 ft w of se c sw.

TEXAS

ARCHER COUNTY — Golding & Cochran, Wichita Falls, W. E. Brown, 60, 1, W. E. Probert sur, 150 ft from s and e lines of Blk. 24. United Prod. Co., Wichita Falls, H. O. Kunkel, 63, 3, G. W. Stell sur, 300 ft s of No. 2; J. D. Lyles, 80, 1C, S 2, S.P. Ry. sur, 1325 ft from w and 150 ft from s line. L. T. Burns, Wichita Falls, J. A. Kemp, 200, 1, M. Fanning sur, 150 ft from n and 950 ft from e line. J. H. Howell, Electra, J. B. Miller, 40, 1, B 19, Amer. Trib. sur, 150 ft e of center of w line Lot 4. Hi-Land Oil Co., Wichita Falls, G. H. Moss, 1, H.T.&B. sur, 3052 ft from n and 150 ft from e line. Roy I. Carter, Wichita Falls, J. L. Scott, 80, 1, J. L. Scott sur, 450 ft from n and 1010 ft from e line. Douglas Oil Co., Wichita Falls, W. J. McClure, 100, 4, B 13, Crawford sur, 345 ft e of No. 1. W. S. Owensby, Wichita Falls, J. Hemmi, 251, 1, Blk. 3, C.&P. sur, 800 ft from e and 1271 ft from s line. Panhandle Refg. Co., Wichita Falls, J. Matleck, 80, A4, J. Dorsey sur, 450 ft from n and 750 ft from e line. M. & V. Oil Co., Wichita Falls, G. A. Lauster, 40, 3, S 3, B.B.B. &C. sur, 300 ft w of No. 2. Jack Clark, Fort Worth, S. Cowan, 40, 1, B 61, J.C.S.L. sur, 150 ft from n and e lines. Mrs. H. B. Wallace,

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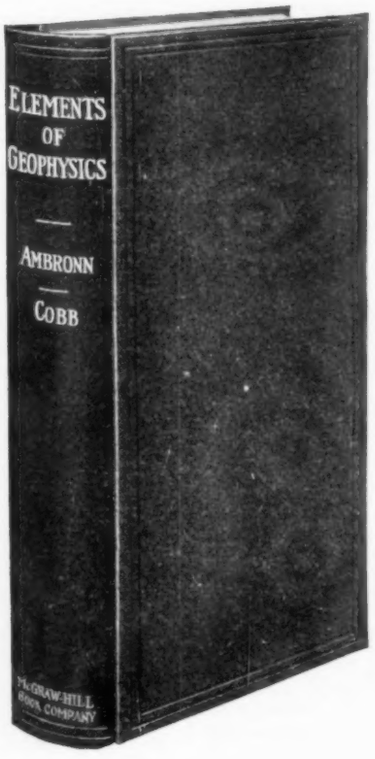

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AUSTIN COUNTY—Humble, Houston, J. C. Walton, A, 7, W. C. White sur, 519 ft from se and 150 ft from sw lines.

BROWN COUNTY — S. B. Owens, Inc., Brownwood, S. B. Cannon, 80, 7, S O, W. H. Ahrenbeck sur, 650 ft from s and 1000 ft from e line. W. D. Gully, Brownwood, A. F. Armstrong, 50, 1, S 1, H.&G.N. sur, 150 ft from n and e lines. Texas Co., Wichita Falls, S. C. Kesler, 60, 11, S 42, H.T.&B. sur, 300 ft w of No. 3. Humble, Wichita Falls, N. E. Munselle, 40, 4, Ahrenbeck sur, 150 ft from n and w lines. E. M. Curry, Cross Plains, R. Prater, 174, 1, W. L. Swain sur, 430 ft from n and 810 ft from w line. Royal Pet. Co., Brownwood, Etheridge, 314, 16, S 7, K.C.S.L. sur, 1330 ft from n and 760 ft from e line. C. O. Moore Oil Corp., St. Louis, Mo., N. E. Munselle, 80, 7, W. Ahrenbeck sur, 300 ft w of No. 6; 6, 402 ft w of No. 5. E. L. Smith Oil Co., Mexia, L. A. George, 100, 11, No. 42 R. C. Chaddick sur, 300 ft n of No. 10; S. C. Kesler, 76, 2, S 42, H.T.&B. sur, 300 ft n of No. 1.

BROOKS COUNTY — Milam Drilling Co., San Antonio, R. Allen, 160, 8, Blk. 37, 3400 Vs from e and 2330 Vs from n line.

CALLAHAN COUNTY—J. F. Jones et al, Abilene, W. A. Ramsey, 80, 9, 2282 T.E.L. sur, 300 ft e of No. 8. Moutray Oil Co., Abilene, J. A. Flores, 40, 20, S 149, B.B.B.&C. sur, 300 ft s of No. 14; C. Flores, 34, 6, S 149, B.B.B.&C. sur, 150 ft from n and e line se¼ of sw¼. E. W. Schaffner, Cross Plains, R. Cowen, 22, 5, B 73, C.C.S.L. sur, 300 ft no of No. 4. Hudson, Robinson & Stewart, Cottonwood, H. B. Webster, 35, 1, L 5, W. Hickman sur, 630 ft from w and 325 ft from s line. R. W. Manchill, Cisco, L. Williams, 60, 5, S 139, Univ. Lands sur, 1980 ft from n and 150 ft from e line. Dickey Oil Co., & Schauerbauer, Cisco, R. D. Williams, 80, 2, S 24, D.&D. Asy. sur, 570 ft from n and 150 ft from e line. J. W. Decker, Cisco, L. Seale, 80, 1, S 130, B.B.B.&C. sur, 1141 ft from e and 150 ft from s line. Moutray Oil Co., Abilene, A. Hickman, 445, 53, S 149, B.B.B.&C. sur, 330 ft sw of No. 52. J. C. Hunt et al, Abilene, J. Cottle, 80, 1, 3196 T.E.&L. sur, 945 ft from n and 940 ft from w line nw¼. Ray Testerman, Moran, Alvey, 5, 2272 T.E.&L. sur, 450 ft from n and e lines.

CONCHO COUNTY — T. B. Slick et al, Tulsa, Okla., H. L. Mosley, 160, 1, S 1838, L. Bachman sur, 150 ft from s and w lines.

CROCKETT COUNTY—California Co., Midland, J. M. Shannon, 1, S 42, B.B.Tel&R. sur, 2323 ft from e and 343 ft from s line.

COLEMAN COUNTY — Lloyd Oil Corp., Fort Worth, G. B. Bartholomew, 310, 1, No. 279 Wm. Farris sur, 210 ft from w and 150 ft from s line.

CARSON COUNTY—McMan O. & G. Co., Tulsa, Okla., L. C. McConnell, 80, 1, S 187, B 3, I.&G.N. sur, 330 ft from n and e lines e½ sw¼. Dixon Creek Oil Co., Amarillo, Block 40, 1, S 11, B 4, I.&G.N. sur, 330 ft from n and e lines of ne¼ of nw¼.

CALDWELL COUNTY—Humble, Houston, F. Gray, 83, 1A, J. Hinds sur, 150 ft from n and 1050 ft from w line; F. Gray, 48, 10C, J. Hinds sur, 1060 ft from w and 750 ft from s line; J. L. Northcutt, 20, B4, J. Hinds sur, 750 ft from w and 150 ft from n line; C. E. Smith, 30, 8B, J. Hinds sur, 400 ft from n and 480 ft from e line.

COLORADO COUNTY—Coyle-Concord Oil Co., San Antonio, Nelson, 648, 1, S 43, I.&G.N. sur, center of section.

CLAY COUNTY—Art & Taxman, Wichita Falls, Byers, 40, 3, B 16, Byers sur, 324 ft n of No. 1. Saxet Oil Co., Petrolia, Fee, C, 5, 47, S 19, B 14, P.C.S.L. sur, 450 ft from n and 740 ft from e line; 48, 150 ft from n and 240 ft from e line.

DUVAL COUNTY—J. G. Mackay, Hebbronville, J. T. Dinn, 40, 2, 454, Blk. 1, 450 ft from n and 150 ft from e line. Magnolia, Dallas, Hahl, 190, 10, Sec. 250, 300 ft w of No. 9 in Blk. 24. Humble, Houston, Kohler, 37, No. 144 N. B. Gussett sur, 330 ft from n and 405 ft from e line sec. Southern Oil Co., Lytle, W. Wood, 40, 1, No. 215, 450 ft from n and 1409 ft from e line. M. E. Trussell, San Diego,

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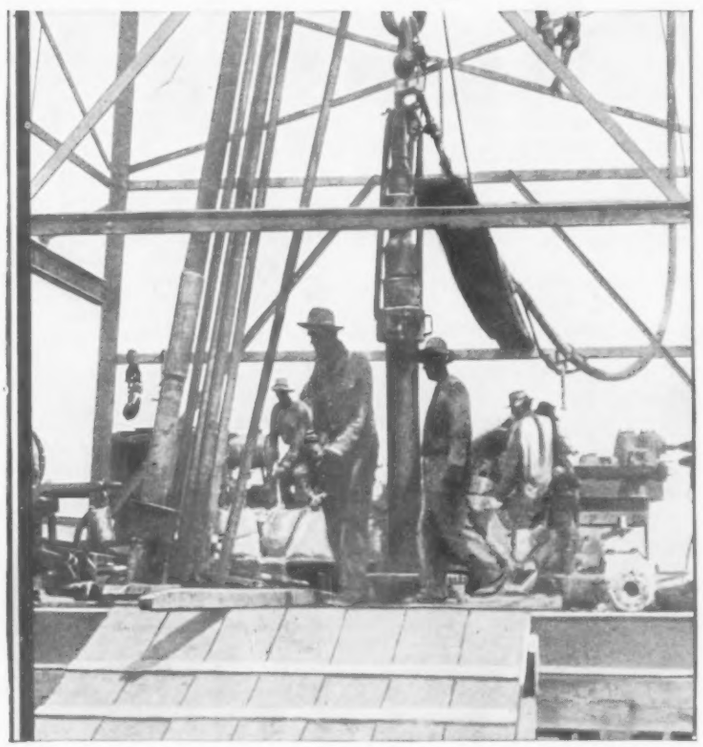

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EASTLAND COUNTY—Texas Pacific Coal & Oil Co., Thurber, Fee, 3, C. L. Durocher sur, 2987 ft from e and 2205 ft from s line.

ECTOR COUNTY—Humble, Cisco, R. L. York, 640, 1, S 16, B 44, T.&P. sur, 330 ft from n and 2640 ft from e line.

ERATH COUNTY — Lone Star Gas Co., Dallas, J. M. Cage, 2, J. Latham, Jr. sur, 610 ft from w and 660 ft from n line.

FOARD COUNTY—Humble, Wichita Falls, J. Matus, 2, S 33, B 8, H.&T.C. sur, 50 ft s of No. 1.

GRAY COUNTY—Shamrock O. & G. Co., Amarillo, Saunders, 80, 2, S 3, B 1, A.C.H.&B. sur, 330 ft from s and e lines of w½ of ne¼; Plains, 80, 2, S 4, B 1, A.C.H.&B. sur, 330 ft from s and w lines of e½ of se¼; McCutcheon, 68, 2, S 1, J. G. Eustis sur, 512 ft n of No. 1. Gulf, Fort Worth, J. M. Saunders, 130, 3, S 40, B 3, I.&G.N. sur, 330 ft from n and 990 ft from w line. Texas Co., Wichita Falls, G. H. Saunders, 160, 17, S 3, B 1, A.C.H.&B. sur, 330 ft from n and e lines of w½ se¼.

GONZALES COUNTY—Acme Oil & Royalty Co., San Antonio, H. K. Weber, 242, 1, T. Wright sur, 850 ft from n and 2525 ft from w line.

GLASSCOCK COUNTY — World Oil Co., Fort Worth, L. S. McDowell, 160, 26, S 21, B 34, T.&P. sur, 330 ft from n and e lines of se¼nw¼.

HILL COUNTY — Mahon, Pennington & Blackwell, Fort Worth, A. Nelson, 50, 2, A. M. Franks sur, 240 ft from n and 200 ft from w line.

HAYES COUNTY—Jno. H. Foster, Davenport, Ia., W. G. Barber, 146, 1, No. 4, Z. Hinton sur, 1560 ft from nw and 1170 ft from sw line.

HARRIS COUNTY—Humble, Houston, B. F. Williams, 7, W. W. Williams sur, 50 ft from n and 250 ft from e line.

HOWARD COUNTY—Humble, Houston, H. R. Clay, 320, 6, S 138, B 30, Univ. sur, 330 ft from s and w lines of w½; 7, 1320 ft n of No. 6; 8, 330 ft from n and 990 ft from e line. Gulf, Fort Worth, H. R. Clay, 320, 9, S 155, B 29, W.&N.W. sur, 330 ft from n and w lines of sec.

HARDIN COUNTY — Texas Co., Houston, Fee, 815, 305, S. Jackson sur, 235 ft e of No. 266.

HUTCHINSON COUNTY—Midwest Explo. Co., Amarillo, Moore, 80, 3, S 125, B 4, I.&G.N. sur, 330 ft from s and e lines of s½ of nw¼.

IRION COUNTY — C. G. Cromwell, San Angelo, H. C. Fuller, 600, 1, S 81, B 1, H.& T.C. sur, 631 ft from e and 2134 ft from s line section.

JEFFERSON COUNTY—Westbury Oil Co., Beaumont, A. West, 25, 1, D. Choate sur, 200 ft from e and 540 ft from s line. Yount-Lee Oil Co., Beaumont, McFaddin, 119, P. Humphreys sur, 1725 ft from w and 1612 ft from n line; Gladys, 98, J. A. Veatch sur, 156 ft from w and 108 ft from s line of Blk. 98.

JACK COUNTY — R. H. Manning, Fort Worth, Brentmore, 26, 7, J. W. Williams sur, 464 ft from e and 150 ft from s line. Petroleum Prod. Co., Wichita Falls, J. A. Raley, 60, 1, I. Hughson sur, 150 ft from n and w lines.

JIM HOGG COUNTY — W. R. Shankle, Laredo, R. Holbein, 10, 3, B 22, Las Animas sur, 90 ft from n and 150 ft from w line.

LIBERTY COUNTY — Harrison Oil Co., Houston, Balderach, 10, 1, S 125, H.&T.C. sur. Empire G. & F. Co., Daisetta, Barngrover, 35, 30, J. Devore sur, 100 ft from e and 75 ft from s line. Sun Oil Co., Beaumont, L. Carr, 15, 14, J. Devore sur, 50 ft n of No. 10.

LIMESTONE COUNTY — C. F. Lytle, Mexia, J. L. Thompson, 141, 6, S 3, P. Varela sur, 170 ft from sw and 370 ft from se line.

MOORE COUNTY — Canadian River Gas Co., Amarillo, J. T. Sneed, C, 160, 1, S 46, B 6T, T.&N.O. Ry. sur, 660 ft from n and e lines of sw¼.

MONTAGUE COUNTY — Roy I. Carter, Wichita Falls, R. W. Cunningham, 40, 10, J. N. Hodges sur, 300 ft n of No. 9.

PECOS COUNTY — Phillips Pet. Corp., Bartlesville, Okla., I. T. Pryor, 3, S 78, B OW, T.&M. sur, 75 ft n of No. 1 nw¼. California Co., Midland, M. A. Smith, 649, 5, S 37, B 194, G.C.&S.F. sur, 176 ft from n and 330 ft from e line sec.

PALO PINTO COUNTY—F. L. Walker, Strawn, M. W. Smith, 66, 1, B 82, B.C.S.L. sur, 1000 ft from e and 550 ft from s line.

PANOLA COUNTY — Arkansas-La. Pipe Line Co., Shreveport, La., I. H. Crenshaw, 105, 3, E. F. Mitcheson sur, 260 ft from e and 700 ft from s line.

SHACKLEFORD COUNTY—S. B. Owens, Inc., Brownwood, J. M. Proctor, 40, 1C, S 170, E.T. Ry. sur, 150 ft from s and w lines ne¼. L. E. Lasseter, Fort Worth, E. Brazzell, 101, 2, S 52, Blind Asy. sur, 1950 ft from w and 150 ft from s line. Layne Pet. Synd., Moran, S. S. Diller, 40, 2, S 42, L.A.L. sur, 150 ft from n and 450 ft from w line. Putnam Oil Co., Cisco, J. T. Cockrell, 54, 28, S 6, L.A.L. sur, 200 ft n of center of s line. St. Mary's O. & G. Co., Moran, J. W. Littlefield, 112, 26, S C, L.A.L. sur, 300 ft s of No. 21. Simms Oil Co., Dallas, H. A. Lones, 640, 11, S 64, B 11, T.&P. sur, 200 ft from s and w lines.

SMITH COUNTY — East Texas Oil Corp., Tyler, Peoples Nat'l Bank, 259, 1, Jno. McFadden sur, 150 ft from n and w lines.

STEPHENS COUNTY — Grantor Oil Co., Caddo, P. Stevenson, 37, S 5, B 5, Bayland Asy. sur, 600 ft from n and 150 ft from w line.

STERLING COUNTY—Cranfill & Reynolds, Cisco, H. Tweedle, 80, 1 Z, S 10, B T, T.&P. sur, 150 ft from s and e lines n½ of ne¼.

TOM GREEN COUNTY — D. W. Wiley, San Angelo, E. Meyer, 640, 1, S 6, Blind Asy. sur, 222 ft from e and 290 ft from s line ne¼ se¼.

THROCKMORTON COUNTY — W. M. Mosley, Breckenridge, B. Davis, 80, 1, T.E.&L. sur, 150 ft from s and w lines of se¼. Coombs & Rogers, Wichita Falls, J. L. Tuggle, 40, 1, 909 T.E.&L. sur, 150 ft from n and e lines of sec. Continental Oil Co., Wichita Falls, S. J. Walker, 90, 1, 907 T.E.&L. sur, 777 ft from n and 150 ft from e line; 2, 776 ft from w and 150 ft from n line. F. C. Clark, Breckenridge, J. A. Gather, 77, 1, D.L.&C. sur, 200 ft w of center of e line. Less Combest et al, Albany, W. M. Jones, 80, 1, S.P. Ry. No. 2 sur, 1350 ft from nw and 150 ft from sw line; J. E. Hughes, 80, 5, 902 T.E.&L. sur, 618 ft from e and 150 ft from s line sec; 4, 918 ft from e and 150 ft from s line sec; L. Tuton, 80, 3B, S.P. Ry. No. 2 sur, 1170 ft from se and 1650 ft from ne line.

TAYLOR COUNTY—Dunigan Bros., Breckenridge, Hunter, 80, 1, S 122, W. R. Willis sur, 931 ft from e and 937 ft from s line.

UPTON COUNTY — Pure Oil Co., Fort Worth, E. S. Hughes, 300, 4, No. 4 Wm. Teel sur, 300 ft w of No. 2.

WICHITA COUNTY—F. C. Baldwin et al, Fort Worth, J. W. Kennedy, 50, 31, S 6, G.C.& S.F. sur, 300 ft s of No. 9. Panhandle Refg. Co., Wichita Falls, T. L. Burnett, 80, A13, S 6, G. P. Meade sur, 510 ft from e and 600 ft from s line se¼ne¼. Mid-Continent Holding Corp., Wichita Falls, Wilkerson, 70, 8, B 3, J. McCool sur, 300 ft s of No. 3. G. W. Cooper et al, Wichita Falls, Foster-Allen, 20, 1, H.T.&B. sur, 150 ft from n and w lines. Kimbell & Bostic, Burkburnett, S. L. Denny, 78, 6, B 27, W. M. Graves sur, 150 ft from n and e lines.

WILBARGER COUNTY—Johnson Fraser, Wichita Falls, S. A. Dill, 20, 1, J. Poitevent sur, 150 ft from s and w lines. Fain-McGaha Oil Corp., Wichita Falls, W. T. Waggoner, DD, 80, 3, S 39, M.E.P.&P. sur, 150 ft from s and w line nw¼; W. T. Waggoner, II, 240, 1, S 41, M.E.P.&P. sur, 1320 ft from s and 150 ft from w line sec.

WHEELER COUNTY — Fain-McGaha Oil Corp., Wichita Falls, I. Close, 5, S 76, B 23, H.&G.N. sur, 660 ft from n and w lines of sec. Northern Texas Utilities Co., Wichita Falls, J. W. Gooch, 560, 6, S 81, B 23, H.&G.N. sur, 660 ft from n and w lines of sec; 5, 1325 ft from n and 660 ft from w line of sec.

WEBB COUNTY—O. W. Killam, Laredo, A. M. Bruni, 10, 14, S 5, M. Arispe sur, 430 ft from nw and 170 ft from sw line Blk. 16. J. J. O'Hearn, Laredo, J. G. Valdez, 40, 2, B 6, No. 54, 663 ft from n and 667 ft from e line.

WASHINGTON COUNTY — Sun Oil Co., Beaumont, W. F. Schlottman, 86, 2, J. F. Perry sur, 150 ft from w and 1297 ft from se line.

WARD COUNTY—Atlantic, Dallas, J. B. Bennett, A, 160, A2, S 16, B 34, H.&T.C. sur, 1650 ft from sw and 2310 ft from se line sec.

YOUNG COUNTY — Underwood Drilling Co., Wichita Falls, R. Campbell, 60, 2, 1376 T.E.&L. sur, 170 ft from n and 450 ft from e line. Leterman & Pennell, Loving, G. Garrett, 40, 4, Y.C.S.L. sur, 300 ft s of No. 3. Goldsmith & King Royalty Co., Wichita Falls, H. O. Kunkel, 40, 5, G. W. Stell sur, 150 ft from e and 750 ft from s line. W. H. Junker, Olney, J. E. Boley, 50, 1, 194 T.E.&L. sur, 783 ft from n and 1383 ft from w line. Holbrook & Woods, Wichita Falls, F. M. Cullers, 80, 7, B 19, Y.C.S.L. sur, 300 ft w of No. 6. King Royalty Co., Wichita Falls, H. O. Kunkel, 40, 5, G. W. Stell sur, 150 ft from e and 750 ft from s line; 4, 300 ft n of No. 5. Sun Oil Co., Dallas, O. Deitrich, 114, 13, S 4, B.B.B.& C. sur. E. G. Christie, Olney, Waddell, 213, 1, 83 T.E.&L. sur, 150 ft from n and 1604 ft from e line. Bonner Oil Co., Wichita Falls, J. W. Davis, 120, 5, 1395 T.E.&L. sur, 327 ft e of No. 1. Pandem Oil Co., Wichita Falls, A. A. Morrison, 5, 1, W. W. James sur, 155 ft n of center of s line. Parks & Reed, Abilene, O. R. Carpenter, 50, 7, E. W. Sargent sur, 150 ft from w and 450 ft from s line. R. E. Allday, Wichita Falls, C. W. Johnson, 40, 1, E. W. Sargent sur, 150 ft from n and e lines of Lot 6. Meyer, Cox, Gilmore & Taylor, Markley, J. W. Cox, 40, 1, B 13, Y.C.S.L. sur, 150 ft from e and 450 ft from s line. Bridwell & Mayfield, Wichita Falls, F. M. Cullers, 120, 5, J. L. Hyatt sur, 150 ft from s and w lines. Kleiner, H-Y Oil Co. & West, Cisco, C. W. Langston, 205, 35, 1490 T.E.&L. sur, 975 ft from n and 850 ft from w line; 36, 400 ft e of No. 16. King Royalty Co., Wichita Falls, H. O. Kunkel, 40, 3, G. W. Stell sur, 300 ft s of No. 2. Panhandle Refg. Co., Wichita Falls, N. Prideaux, 100, D4, I.&G.N. sur, 300 ft w of No. 3. Holbrook & Woods, Wichita Falls, F. M. Cullers, 80, 6, S 19, Y.C.S.L. sur, 150 ft from s and e lines. Wooten & Reed, Graham, Fisher, 23, 1, A. C. Casey sur, 160 ft from n and e lines. Kleiner, H-Y Oil Co. & West, Cisco, C. W. Langston, 205, 39, 1490 T.E.&L. usr, 300 ft s of No. 37; 40, 300 ft s of No. 39.

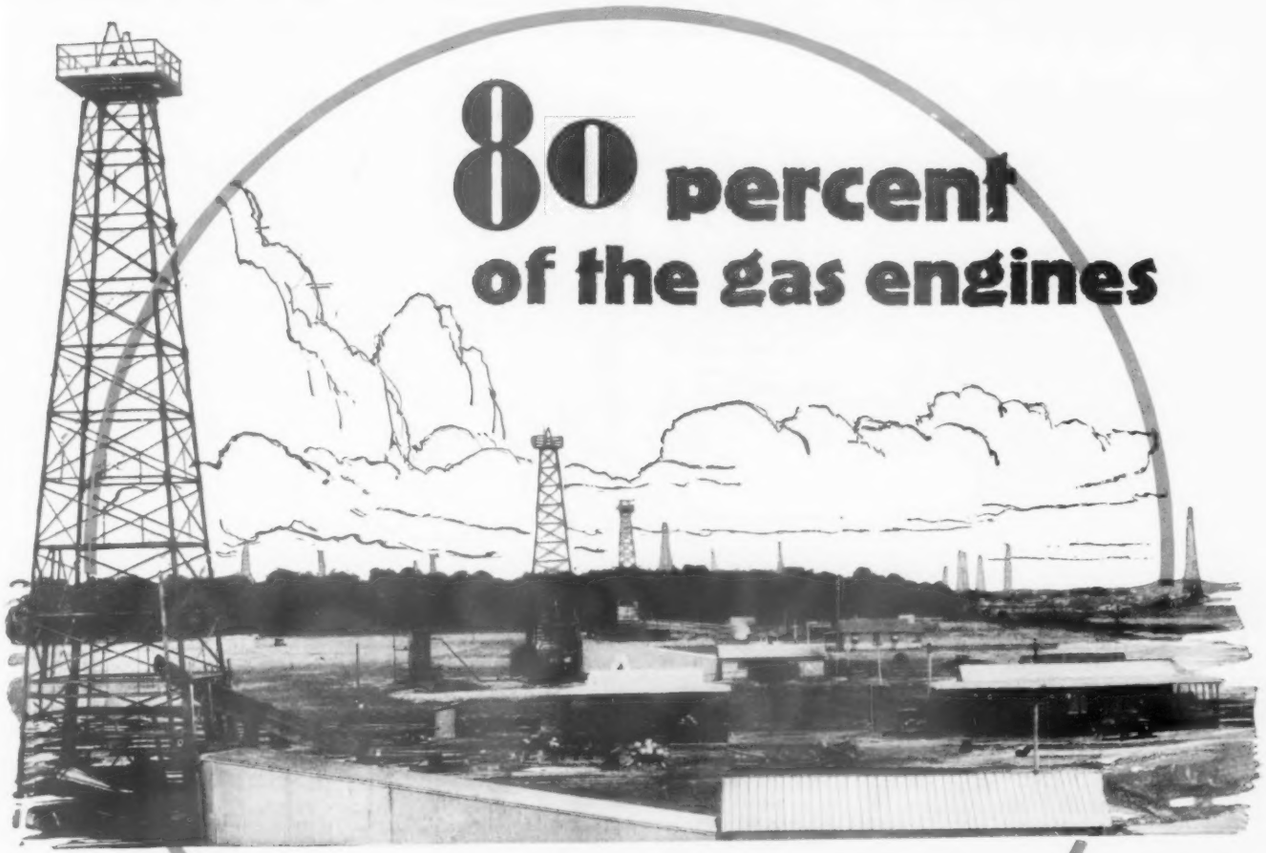
ZAPATA COUNTY—South Texas Prod. Co., Laredo, R. R. Jennings, 2, S. A. de Mira Flores sur, 1300 ft from nw and 9800 ft from sw line of sur. O. W. Killam, Laredo, F. G. Martinez, 160, 1, Sec. 2, T.&N.O. Ry. sur, 543 ft from w and 150 ft from s line se¼. Magnolia, Dallas, F. G. Martinez, 3, S 6, T.&N.O. Ry. sur, 660 ft from n and e lines.

Independent Builds Tank For Refugio Production

Houston, Texas. — Independent Oil & Gas Company, Tulsa, has purchased one 80,000-barrel steel tank from the Pittsburgh-Des Moines Steel Company to be erected near the Refugio field, Southwest Texas district, to accommodate production running in excess of pipe line outlets now serving the field. A tank farm site has been acquired on the Claude Heard farm, located on the St. L. B. & M. Railway, near the town of Refugio. J. G. Turner is superintendent in charge of production for the Independent Oil & Gas Company, which has 1000 barrels of daily production, with eight tests drilling.

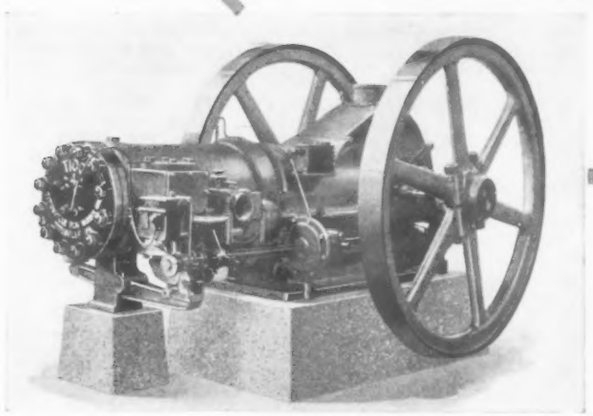
Westexas Corporation to Move to Fort Worth

Fort Worth, Texas.—District offices of the Westexas Oil & Royalty Corporation have been moved from Abilene to the W. T. Waggoner building, Fort Worth. Headquarters of the company are located at Pittsburgh, Pennsylvania. Holdings and producing royalty interests are held in Central West and West Texas districts. C. L. Renaud is president, and T. M. Prettyman is vice-president, both having moved to Fort Worth the past week.



80 percent of the gas engines

—at the Valley Center Field are TICOS!



Unique features of the Tico 4 Cycle 25-90 H.P. Gas Engine

Extra long stoke ↖ Easy hand or air starting ↖ All reciprocating parts and governor enclosed oil tight ↖ Patented dash pot insures absolute valve alignment ↖ Two piece cylinder head.

That is proof enough of the preference Tico Engines enjoy among oil men who demand an engine that is easy to start, easy to keep regulated and that's "got the power" they need. Economy of operation is always essential.

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OIL FIELD EQUIPMENT
GAS ENGINES—PUMPS—BOILERS—DRILLING RIGS—STEAM ENGINES

WILDCATS FROM ALL SECTIONS

WEST TEXAS

Completions

Company, Well and Loctaion	Initial Production Bbls.	Depth
CROCKETT COUNTY—		
W. A. Moncrief et al, Todd 1 (Sec. 29)	*	1670
GLASSCOCK COUNTY—		
Landreth & Tidal Oil Co., Houston 1	*	3465
PECOS COUNTY—		
Milham Corp., McDonald 1	*	1650
Merrick & Bristow, Neville 1	*	1670

ANDREWS COUNTY—Deep Rock Oil Co. et al's Ogden 1, elev 3206 ft, top salt 1750 ft, dr 3185 ft.

BORDEN COUNTY — Louisiana Oil Ref. Corp.'s Miller 1, elev 2541 ft, top salt 1080 ft, fsh 3185 ft. W. A. Moncrief & Humble's Munger 1, elev 2433 ft, top salt 1090 ft, ur 2425 ft. Teas & Wheeler's Long 1, elev 2516 ft, top salt 1030 ft, dr 3600 ft.

BREWSTER COUNTY—Ed. W. Bateman & Co.'s Neville 1-A, sd 2274 ft. Brewster Oil Co.'s Fee 1, sd 1930 ft. E. L. Chapman et al's Skinner 2, set 8¼-inch cas 900 ft J. C. Grastorf et al's Redfield 1, machine.

COCHRAN COUNTY — Continental Oil Co.'s Slaughter 1-A, elev 3793 ft, pb from 5000 to 4885 ft and testing 6 bbls oil daily. Westbrook & Co.'s Slaughter 1, set 8¼ cas 2700 ft.

CONCHO COUNTY—D. Lamb et al's H. L. Mosely 1, machine.

COKE COUNTY — Mid-Kansas O&G Co.'s Lackey 1, elev 2152 ft, sd 4139 ft.

CROCKETT COUNTY — California Co.'s Powell 3, elev 2725 ft, top salt 1080 ft, showing oil and water 2577-2632 ft; Shannon 1, rig. Cushing Ref. & Gasoline Co.'s Powell 3, dk. Empire G&F Co.'s Shannon 1, rig. Lewis & Daniels' Pecos River Bed 1, elev 1967 ft, sd hfw 1335 ft. T. P. Coal & Oil Co.'s Shannon 1, rig.

CULBERSON COUNTY — Grisham-Hunter Corp.'s Fee 1, dr 1770 ft; Seay 1, rig. Hickey et al's Finley 1, elev 3916 ft, sd 2275 ft. Scott & Dittman's Miller 1, elev 4059 ft, sd 3508 ft. West Texas Oil & Explo. Co.'s McGregor 1, sd 825 ft.

ECTOR COUNTY—Penn-Humble-Atlantic's York 1, rig.

EL PASO COUNTY — Inter-Coastal Oil Co.'s Malone 1, sd 1330 ft.

FISHER COUNTY—Cranfill-Reynolds Co.'s Barrett 1, dr 2500 ft; D. M. Bledsoe 1, lcn. Landreth Prod. Corp.'s Cooper 2-A, sd 1275 ft. Magnolia Pet. Co.'s Lee 1, elev 1827 ft, ur 3465 ft. Mid-Kansas-Phillips Pet. Co.'s Stephenson 1-A, top lime 3228 ft, co 3285 ft. Mid-West Explo. Co.'s Steele 1, elev 1867 ft, testing oil prod. 3192-93 ft. Henry Riley et al's Veatch 1, elev 1879 ft, sd hfw 3300 ft. Roeser-Pendleton & Amerada's Waco Bank 1, dr 810 ft.

GAINES COUNTY — Cranfill-Reynolds Co. & La. Oil Ref. Corp.'s Ralph 1, dr 415 ft.

GARZA COUNTY—H. C. Cate & Pandem Oil Corp.'s Stoker 1, dr 420 ft. Thompson et al's Tuffing 1, elev 2277 ft, sd 2610 ft.

GLASSCOCK COUNTY — California Co.'s Currie 3, pipe stuck, td 2177 ft; Jones 1, dk. Glasscock Bros. et al's Edwards 1, sd 1475 ft. Kirby Pet. Co. & Arkansas Fuel Oil Co.'s Baker 2, dr 330 ft. Lion Oil Ref. Co.'s Coffee 2, dr 1300 ft; Coffee 3, dr 1110 ft. Shell Pet. Corp.'s Coffee 1, top lime 2053 ft, pb from 2280 to test oil pay 2098-2137 ft; Kloh 1-B, (Sec. 11) dr 1915 ft. Simms Oil Co.'s Coffee 1, dr 1910 ft. E. L. Smith Oil Co.'s Coffee 2, spudded and sd. Sun Oil Co.'s Phillips 3, elev 2637 ft, testing pay 2083-2220 ft; Phillips 4, elev 2652 ft, dr 815 ft. World Oil Co.'s McDowell 2-C, rig.

TOM GREEN COUNTY — Fitzgerald & Smith's Bennett 1, sd 2430 ft. Fuhrman Pet. Corp.'s Lewis-Wardlaw 1, machine.

HOCKLEY COUNTY — World Oil Co.'s Ellwood 1, elev 3363 ft, top salt 2157 ft, sd 3250 ft.

HOWARD COUNTY—Meriwether Oil Co.'s Eva Smith 1, sd 1220 ft.

HUDSPETH COUNTY — The California Co.'s University 1, elev 5833 ft, ur 2829 ft. Richardson et al's Thaxton 1, spudded and sd.

IRION COUNTY—Banner Oil Co.'s Nutt 2, lcn. Brown & Fox's Tankersley 2, machine. J. B. Crawford et al's Nutt 1, sd 1105 ft. Carl G. Cromwell et al's Fuller 1, dr 250 ft. Irion Oil Co.'s Tankersley 1, sd 377 ft. Kingwood Oil Co.'s Sugg 1, elev 2334 ft, dr 7725 ft. J. A. Starkweather et al's Lindley 1, sd 1150 ft. P. H. Williams et al's Ashe 1, fsh 4705 ft.

JONES COUNTY—Adsit et al's Swenson 1-A, elev 1521 ft, ur 2250 ft. Cranfill-Reynolds Co. & California Co.'s Stephens 1, dr 300 ft. Mid-Tex O&G Co.'s King 1, sd 1520 ft; W. A. Minter 1, lcn. F. E. Shaheen et al's King 1, ur 1650 ft.

KENT COUNTY—White & Smith's Pursley 1, sd 300 ft.

LOVING COUNTY — Humble Unit Plan's Kloh 1-C, elev 2814 ft, top salt 1130 ft, fsh 1670 ft. Independent O&G Co.'s Wheat 1, dr 410 ft. Lockhart & Co.'s Allen 3, top salt 725 ft, dr 1200 ft; Hubbard 3, elev 2691 ft, top salt 775 ft, co 4036 ft; Hubbard 4, elev 2694 ft, top salt 710 ft, dr 2700 ft; Wheat 1-H, (dd) dr 4580 ft.

LYNN COUNTY—Hart Oil Corp. & McCamey's Edwards 1, elev 3128 ft, top salt 2140 ft, sd hfw 4835 ft.

MENARD COUNTY — C. G. Cromwell & Jas. Duffey's Winslow 2, rig.

MITCHELL COUNTY—Gibson-Johnson et al's Scott 2, spudded and sd; Scott 3, lcn. Teas & Wheeler's Radford 1, elev 2223 ft, sd 4310 ft.

NOLAN COUNTY — Gibson & Johnson's Bond 1, elev 2126 ft, ur 1425 ft. Phillips Pet. Co.'s Plunkett 1, elev 2423 ft, ur 4225 ft.

PECOS COUNTY — Anderson-Prichard & Texas Co.'s Wright 1, machine. Anna Bell Oil Co.'s Hollingsworth 1, machine. E. W. Bateman & Co.'s Cordova 1, dr 875 ft. E. L. Chapman & J. D. O'Mara's W. C. Streety 1, set 10-inch cas 825 ft. Cosby et al's Ft. Stockton 1, elev 2941 ft, top salt 1140 ft, sd 2020 ft. Cosden Oil Co.'s McDonald 1, sd 225 ft. Cromwell & L. C. Harrison's White & Baker 1, dr 210 ft. Dittman Drlg. Co. et al's Cunningham 1, lcn. Dixie Oil Co.'s McKenzie 1, lcn. Henshaw Bros. (Angelo Pet. Inc.'s) McDonald 1, elev 2425 ft, top salt 690 ft, sd 1425 ft. Humble O&R Co.'s Cunningham 1, machine. Independent O&G Co. & Rowan-Tong, Inc.'s McDonald 2, elev 2478 ft, top salt 720 ft, sd 1645 ft; Phelps 1, dr 155 ft. Jayhawk Pet. Co.'s Price 1, elev 2310 ft, top salt 655 ft, show gas 1380 ft, dr 1425 ft. J. L. Kennedy et al's Kennedy 1, elev 3217 ft, dr 1385 ft. Landreth Prod. Corp.'s Cunningham 1, dr 1020 ft; McDonald 1-B, fsh 1435 ft; Ely Smithpeter 1, top salt 827 ft, fsh 1655 ft. Mazda Oil Corp.'s Cordova 1, rig. W. A. Moncrief et al's Clarkson 1, top salt 875 ft, sd 1832 ft. Moncrief & L. C. Turman's Sullivan 1, lcn. R. E. Moore et al's Arnold 1, sd 1295 ft. Geo. B. Morgan et al's Toberg 2, elev 2311 ft, top lime 1200 ft, pb from 1285 to test oil 1273-75 ft; Tippett 1, spudded and sd. H. T. Odneal et al's Jas. Power 1, lcn. J. D. O'Mara et al's Bennett 1, sd 875 ft. S. B. Owen-Cranfill-Reynolds & Monte Warner's Masterson 1, elev 2425 ft, tested 700 ft oil in hole 1249-53 ft, dr 1305 ft. Phillips Pet. Co.'s Courtney 3, machine. Rector Oil Co.'s State 1, elev 2469 ft, dr 950 ft. M. M. Rowan et al's Sherbino 1, elev 2884 ft, dr 2470 ft; University 1, making oil and water, pb from 2044 ft. Schumaker et al's Williams 1, elev 2980 ft, dr 2330 ft. Sides & Cloyd's Blackstone-Slaughter 1, dr 250 ft. Texas Co.'s Graef 1, lcn. Tower & McKanna, Inc.'s University 1, (Sec. 14), sd hfw 2049 ft. Transcontinental's University 1, elev 2552 ft, dr 4645 ft. Trees Oil Co.'s J. C. Trees 2, elev 2476 ft, top salt 2443 ft, dr hfw 2895 ft; Trees 3, cellar. F. P. Zoch & Eastland Oil Co.'s Cordova 1, fsh 510 ft.

PRESIDIO COUNTY—TP Coal & Oil Co.'s Bogel 1, dr 2450 ft.

REAGAN COUNTY—Big Lake Oil Co.'s University 1-C, dr black shale 7100 ft; University 2-C, dr lime 7475 ft; University 3-C, killing oil and gas flow with 80 scks baroid, td 8379 ft; University 4-C, flowed 327 bbls oil and 6 million feet gas, fsh tools 8220 ft. Group One Oil Corp. (Conoco's) University 2-B, cem 20-inch cas 67 ft; University 3-B, cem 20-inch cas 104 ft. Henshaw-Brann & Thomas' Hughes 1, dr 200 ft. Skelly Oil Co. & Utah Southern's University 5, elev 2880 ft, top salt 1300 ft, pb from 3094 to 3085 ft.

REEVES COUNTY—Mack Best et al's McKinney 1, dr 450 ft. Hansford et al's Williams 1, spudded and sd. Slack & Fink's Brooks-Huling 1, sd 500 ft. Southern Crude Oil Pur. Co.'s Kloh 1, dr salt 4820 ft. Thompson et al's Eddins 1, fsh 5658 ft. White et al's Hersheusen 1, elev 3244 ft, top salt 2670 ft, dr 3330 ft.

RUNNELS COUNTY—Gibson & Johnson's Johnson 1, rig; Wood 1, dr 1790 ft.

SCHLEICHER COUNTY — Ft. McKavitt Oil Co.'s Tisdale 1, co 3500 ft. Phillips Pet. Co.'s J. A. Whitten 1, elev 2333 ft, dr 5560 ft. Geo. T. Wilson et al's Page 1, spudding.

SCURRY COUNTY—J. G. Armand & Camp Springs O&R Co.'s Quinn 1-A, sd 2567 ft. Byrd & Harmon's Murphy 1, elev 2298 ft, top salt 775 ft, sd 1732 ft. Cottingham & Briscoe et al's Truss 1, elev 2664 ft, top salt 1050 ft, top lime 2175 ft, dr hfw 3140 ft. R. B. Pender O&G Co.'s Davis 1, elev 2208 ft, top salt 445 ft, fsh 4065 ft. E. L. Smith Oil Co.'s Mooar 1, rig.

STERLING COUNTY—S. B. Owens, Inc.'s, Tweedle 1, spudded and sd.

SUTTON COUNTY — Independent O&G Co.'s Wilson 1, lcn. Independent-Sun Oil Co.'s Allison 1, elev 2291 ft, dr 2860 ft. Phillips Pet. Co.'s Holman 1, elev 2277 ft, top lime 2317 ft, dr by tools 6633 ft. L. G. Priest et al's Allison 1, elev 2238 ft, sd 3968 ft.

TAYLOR COUNTY — Adams-Ferguson & Hobbs' J. L. Lowe 1, elev 1970 ft, lcn. Condor Pet. Co.'s Allen 1, lcn. J. B. Jameson et al's Webb 1, elev 1905 ft, dr 4975 ft.

TERRELL COUNTY—Big Bend Oil Corp.'s Bassett 1, elev 2396 ft, sd 1150 ft. Milham Corp.'s Bassett 1, elev 2270 ft, fsh cas 5400 ft. Transcontinental's M. H. Goode 1, rig.

VAL VERDE COUNTY — Phantom Oil Co.'s Ingram 1, dr 885 ft.

WARD COUNTY — Atlantic & Delmar's Hayzlett 4, co after shot, 2500 ft; Hayzlett 5, dr 1500 ft. Continental Oil Co.'s Sealy 2-A, elev 2611 ft, top salt 1088 ft, top lime 2080 ft, pb from 3358 to 2500 ft to try for gas. Cranfill-Reynolds Co.'s Williams-Robeson 1, elev 2516 ft, sd 2495 ft. C. C. Dorr et al's Costley 1-A, skid rig. Gulf Prod. Co.'s O'Broen 7, dr 2250 ft. L. C. Harrison Oil Co.'s Wristen 1, dr 1400 ft. J-H-L Oil Co.'s Hayzlett 3, rig. Penn Oil Co. & Atlantic's Cooper 1, rig; Bennett 2, rig. Shell Pet. Corp.'s Sloan-Owen 1, top salt 765 ft, showing oil and gas, dr 2790 ft. Shipley Oil Corp.'s Monroe 1, sd 565 ft; Hayzlett 3, top salt 725 ft, dr 2500 ft; Hayzlett 4, top salt 765 ft, dr 2500 ft; Hayzlett 5, rig. Sun Oil Co.'s Sealy 1, dk. Texo Oil Co.'s Redman 1-A, elev 2717 ft, set cas 1190 ft.

WINKLER COUNTY — M. J. Bashara et al's Fee 2, lcn. V. T. Bolin et al's Brown 2, sd 2832 ft. Champlin-Winkler Oil Corp. (was Liner's) Campbell 1, elev 2884 ft, top salt 1155 ft, sd 2750 ft. Sun Oil Co.'s Sealy 2, dk.

ABBREVIATIONS

NOTE—The following is the explanation of abbreviations, signs, etc., used in completion and wildcat reports; *—dry hole, abandoned well; ‡—salt water; †—junked and abandoned; ¶—million feet of gas; abn—abandoned; bbls—barrels; b.s.—basic sediment; cas casing; co—cleaning out; dk—derrick; dr—drilling; fsh—fishing; ft—feet; in—inches; lcn—location; m—milling; n, s, e, w—north, south, east, west; r—reaming; sd—shut down; sdtr—sidetracking; sp—spudding; sr—straight reaming; std—standardizing; sw—salt water; td—total depth; ur—underreaming; wo—workover; wosr—waiting on standard rig.

NORTH LOUISIANA

Company, Well and Location	Initial Production Bbls.	Depth
CADDO PARISH—		
D. C. R. Oil Co., Oden 2, 20-19-14	*	2802
Ray-Dawes Drilling Co., Hunter A-4, 9-19-14	75	2438
Standard Oil Co. of La., Caddo School Board 2, 16-19-14	*	2682
Henderson 3, 7-19-14	*	2457

BOSSIER PARISH—Corbett et al's Murff 1, 16-17-11, sd 990 ft. Lanier et al's LeRosen 1, 26-21-14, lcn. Nell & Lanier's Biedenharn 1, 23-21-14, bailing to test 1 ft sand showing little oil and gas, td 998 ft. Walker et al's Autrim 1, 28-22-13, arr test 3184 ft. J. Laskin, Tr.'s Pardee 2, 3-22-11, dr 1140 ft. Morgan et al's Weatherbee 2, 21-19-11, dr 100 ft. Nesbit et al's Burt 1, 20-19-13, lcn; Leonard 1, 20-19-13, setting 12½-inch cas 225 ft. Sam Gold et al's McFarlin 1, 7-19-13, dk. Deleware-La. Dev. Co.'s Bolinger 5, 31-23-11, lcn. Muslow Oil Co.'s Barnett 1, 25-23-11, old well arr deepen, depth not given. Goodman-Johnson's Martin 1, 26-23-12, lcn. Muslow Oil Co.'s Marks Meyer 1, 36-23-12, old well arr deepen, depth not given; Peyton 1, 30-23-11, old well arr deepen, depth not given.

CADDO PARISH—Sam Gold et al's Hunter 3, 17-19-14, 1000 ft fluid in hole, 90 per cent sw, bailing, td 2428 ft; Hunter 4, 17-19-14, lcn. S. T. Onyett's Dixon 1, 10-19-14, wosr td 2444 ft. I. N. Pharris' Oden 1, 19-19-14, sd in shale 2382 ft. Ohio Oil Co.'s Hunter 4, 17-19-14, dk; Hunter 6, 17-19-14, cored sw sand, sd wo 2482 ft. Standard Oil Co. of La.'s Henderson 3, 7-19-14, dry abn, td 2457 ft; Hunter 3, 17-19-14, set 6-inch cas 2360 ft; Hunter 8, 17-19-14, dk; School Board 2, 16-19-14, dry abn, td 2682 ft. Lide et al's Levee Board 1, 24-19-15, topped red shale 2300 ft, tested dry 2410 ft, sd repr bailer 2418 ft. Gulf Ref. Co.'s Oden 5, 18-19-14, ta 2425 ft; Oden 6, 18-19-14, dk. Haynes Bros.' Oden 2, 20-19-14, ta 2505 ft. Texas Co.'s Hunter 3, 8-19-14, plugged back to 2428 ft, tested sw, ta 2428 ft, td 2448 ft; Hunter 6, 9-19-14, set 6-inch cas 2400 ft, bailing to test, td 2436 ft; Sibley 1, 9-19-14, lcn; Sentell 1, 9-19-14, bldg dk. Old River Oil Corp.'s Byrd 1, 15-19-14, rig up. Eylers O&G Co.'s Sentell 1, 9-19-14, arr test, td 2447 ft. Ray-Dawes Drilling Co.'s Hunter A-4, pumping 75 bbls oil, td 2438 ft. Planters O&G Co.'s Pittman 1, 23-19-14, sd wo 2583 ft. Adams & Despot's Dickson 1, 10-19-14, tested dry, show oil 2445 ft, broken sand 2436 to 2445 ft, dr 2455 ft. Fitzsimmons Drilling Co.'s Sentell 1, 10-19-14, moving in rig. Fred H. Ryan's Dickson Hrs. 1, 3-19-14, set 10-inch cas 105 ft. Standard Oil Co. of La.'s School Board 4, 16-19-14, rig up. R. W. Norton's Hill 1, 33-23-16, set 9-inch cas 3680 ft, tested sw 3728 ft, arr deepen.

CALDWELL PARISH—La. Oil Ref. Corp.'s La. Central O&G Co. 1, 31-12-3e, rig up.

CLAIBORNE PARISH — Leue Oil Co.'s Taylor 1, 16-22-8w, dk. El Dorado Chief Oil Co.'s Simmons 1, 27-20-7w, sd in shale and bldrs 2240 ft. Triangle Drilling Co.'s Kilpatrick 1, 7-19-5w, sd changing to heavy rig, td 1350 ft.

DE SOTO PARISH — Benson O&G Co.'s Harris 1, 6-10-13, dr 270 ft; Hill 1, 3-10-13, dr 240 ft. R. O. Roy's Farmer E-1, 5-13-13, lcn. P. J. Becker's Tull 1, 23-21-13, fsh for ds 2475 ft. L. M. Moffit, Tr.'s, Boatright 1, 3-10-13, sd wo 3129 ft. Longstreet Synd.'s Ramsey 1, 33-13-16, ta 2802 ft.

FRANKLIN PARISH—Franklin O&G Co.'s O'Brien 1, 17-13-9e, rig up. Davis et al's Moore 1, 12-11-6e, sd 1430 ft.

MOREHOUSE PARISH—Rainbow Oil Co.'s Louisville Cooperage 1, 33-22-8e, dk. P. J. White's Chess Wymond 1, 32-19-6e, sd wo 3025 ft.

NATCHITOCHES PARISH — S. D. McDaniels' Clark-Morse 1, 23-5-6w, sd wo 2536 ft. Robeline O&G Co.'s Cassady 1, 7-8-9w, ds stuck 3230 ft. Nichols & Wilder's Clark 1, 10-10-8w, rigged up wo.

RAPIDES PARISH—Ayers Bros.' Wicklipp 1, 9-5n-2w, sd 900 ft.

RED RIVER PARISH — W. D. Ball's Krumbholz 1, 32-14-10, sd 1050 ft. Benedum & Trees' Franklin 1, 29-11-9, dr lime 3616 ft. Eylers O&G Co.'s Johnson 1, 17-12-10, dr 1015 ft; Chaffraix 2, 30-12-10, arr to test, td 2706 ft. LeGrande et al's Sample 1, 11-14-11, rig up. Triple Oil Co.'s Pollock 1, 33-13-11, wosr, td 2470 ft.

RICHLAND PARISH—Austin & McDonald's Millsaps 2, 17-17-6e, sd wo 2697 ft; Millsaps 3, 16-17-6e, sd wo 2477 ft; Millsaps 4, 16-17-6e, lcn; Millsaps 5, 8-17-6e, dk; Hunt 1, 13-17-5e, dk. Industrial Gas Co.'s Hodge 1, 7-16-7e, dr 50 ft. A. T. Davidson 1, 6-16-7e, dr 344 ft; Davidson A-1, 6-16-7e, rig up. Ruston Drilling Co.'s Hodge 1, 7-16-7e, dr 50 ft. Triangle Drilling Co. & Woodley Pet. Co.'s Cumpton 1, 16-17-7e, losing returns 56 ft. S. R. Humble's Binion-Sartor 1, 22-17-6e, heading well, td 2481 ft. Palmer Corp.'s Eubanks 1, 26-17-6e, tested 1 mil ft gas 2450 ft, dr 2486 ft; Miles 2, 12-17-6e, set 6-inch cas 2316 ft. Northern La. Gas Co.'s Boykin 4, (relief well 3), 20-17-6e, arr pump water to kill crater, td 2398 ft. Shreveport Contractors' Buie 1, 17-15-7e, old well arr deepen.

SABINE PARISH—Sabine O&G Co.'s Anderson 1, 19-8-12, dr 1250 ft. R. L. Gay, Tr.'s Bowman-Hicks 5, 14-7-14, set 8⅝-inch cas 2090 ft; Long-Bell Lbr. Co. 1, 26-8-14, fsh at 3533 ft; Sabine Lbr. Co. 2, 23-7-14, dr hard lime 3710 ft; Bowman-Hicks A-1, 34-8-12, cored into oil sand 2405 ft. A. H. Tarver et al's Long-Bell Lbr. Co. 1, 29-8-13, dr 3548 ft.

UNION PARISH—Fred Stovall's Stovall 1, 32-23-4e, rig up.

WEBSTER PARISH—F. M. Fuller's Monzingo 1, 27-18-8e, rig up. P. Hudson's Gardner 1, 1-22-11, wo 2734 ft; Gardner 2, 1-22-11, dk; B. L. Slack B-1, 36-23-11, lcn. Magnolia Pet. Co.'s Scroggins 2, 1-22-11, wosr 2708 ft; McCook & Hibbler 1, pulled 8⅝-inch cas, hole cleaned, arr set 5¾-inch cas to test after 11 ft rich oil sand cored 6947-58 ft, td 6958 ft; Kight 1, 33-23-9, wosr 2692 ft; Bailey 1, 29-23-9, arr deepen, td 2774 ft. Sarenta Oil Co.'s Gardner 1, 1-22-11, wtg on 6-inch cas to set 2681 ft. Paul C. Warren's Martin 1, 20-20-9, dr 180 ft. John F. Woodman's Boyd 1, 9-23-11, lcn abn, will not drill. T. W. Clark, Tr.'s Wise 1, 30-23-9, wosr, td 2754 ft.

ARKANSAS

Company, Well and Loctaion	Initial Production Bbls.	Depth
UNION COUNTY—		
E. M. Jones, Hardy & Murphy 1, 34-19-14	*	4060
Loutre Shingle Co. 1, 17-19-14	*	3505

ASHLEY COUNTY — Ark. Fuel Oil Co.'s Crossett Lbr. Co. 1, 1-19-7, rig up. J. C. Marcum's McCarty 1, 10-19-4, sr to bottom 3205 ft.

COLUMBIA COUNTY — L. F. Parker's Erdeks 1, 25-19-22, dr 1150 ft. Talbert & Meeble's Coneland 1, 31-19-19, dr 3651 ft. La. Oil Ref. Corp.'s Green 1, 22-15-19, arr ds test 2484-90 ft.

DREW COUNTY—McClintock & Goedke's Ogle 1, 33-13-5, fsh ds 2530 ft.

FAULKNER COUNTY—Gold Creek O&G Co.'s Stermer 1, 17-4-13, TA 3872 ft.

FRANKLIN COUNTY — Ozark Nat. Gas Corp.'s McElroy 1, 15-8-27, lcn.

GARLAND COUNTY—H. H. Given's Garrett 1, 1-13-19w, dr with tools 3250 ft.

GRANT COUNTY—Jones & Watkins' Meek 1, 5-4-11, TA 1400 ft.

JOHNSON COUNTY—Blackwell O. & G. Co.'s Wyver 1, 21-8-25, arr plug and perf, td 5360 ft.

LINCOLN COUNTY — Pine Prairie O&G Co.'s Carter 1, 33-10-6, arr resume dr 2176 ft.

LITTLE RIVER COUNTY—Grete et al's Allen 1, 31-12-31, ta 2941 ft. C. F. McDonald's Black 1, 12-13-29, sd 1541 ft. Buck Oil Co.'s Taafe 1, 25-12-32, dr broken lime 1783 ft.

MADISON COUNTY — Phillips Pet. Co.'s Skinner 1, 11-14-25, arr abn, td 1368 ft.

MILLER COUNTY—Lenz et al's Person 1, 13-15-26, dr 3110 ft.

OUACHITA COUNTY—Copenhaver et al's Warnick 1, 2-15-17, sd 2190 ft. Chas. McDonald's Fogle 1, 18-14-16, sd wo 2301 ft. Wesson et al's Booth 1, 12-15-19, sd 2203 ft. Artex Oil Co.'s Smith 1, 31-15-17, lcn.

POPE COUNTY — Cosden Oil Co.'s Mo. Pac. R. R. 1, 13-9-19w, rig up.

PRAIRIE COUNTY — Transcontinental Oil Co.'s Novack 1, 36-2-6, cemtd 8¼-inch cas 2058 ft, td 2060 ft.

SEBASTIAN COUNTY—Lavaca O&G Co.'s Cason 3, 21-8-30, dk. J. O. Ingram 7, 22-8-30, lcn. A. G. Williams, Jr.'s Patterson 1, 27-8-30, lcn.

UNION COUNTY—Federal Pet. Co. et al's Fee 1, 5-17-12, tested dry through ds 2330 to 2355 ft. Frank Staples' Ainsworth 1, 8-19-16, cemtd 12½-inch cas 58 ft. S. Arrendale's Gallagher & Nelson 1, 18-18-17, sd 2268 ft. E. M. Jones' Loutre Shingle Co. 1, 17-19-14, dry abn td 3505 ft. Hardy & Murphy 1, 34-19-14, dry abn, td 4069 ft. W. M. Coates, Tr.'s McDuffie 1, 32-19-16, 6⅝-inch cas set 3934 ft, td 4056 ft, bailed, tested 2000 ft sw, pulled liner 4056 ft, attempted run test tool with pckr on ds to test bottom 7 ft of hole, pck hung 20 ft off bottom, opened tool, nothing showed, will wash to bottom, try another test. T. J. Woodley's First National Bank 1, 34-19-18, dk. O. W. Estes' Felsenthal 1, 2-18-15, sd wo 2191 ft. Ark. Drilling Co.'s Norris 1, 17-18-12, dr gumbo 3002 ft. Shell Pet. Corp.'s Carroll 1, 19-18-16, coring 3358 ft. E. L. Chapman's Thompson 1, 4-17-15, lcn. Marine Oil Co.'s Thompson A-3, 10-18-13, rig up.

WASHINGTON COUNTY—Lincoln Lease Holding Co.'s Townsite 1, 30-15-32, sd repr rig 1050 ft. C. H. Willoughby's Jones 1, 34-16-30, sd 1900 ft. O'Hara & Shetterley's Boyd 1, 12-16-32, sd 150 ft.

WHITE COUNTY—Letona Synd.'s Letona 1, 35-9-8, dr caving shale 3500 ft.

VAN BUREN COUNTY — J. S. Martin's Scanland 1, 5-9-13, sd 50 ft.

EAST TEXAS

BOWIE COUNTY—Hooks O&G Co.'s Rosenberg 1, King sur, ta 3086 ft.

CAMP COUNTY—Rogers et al's Enfelt 1, Montgomery sur, sd 1920 ft.

RED RIVER COUNTY—D. M. Buffington's Hoosier 1, Hughart sur, sd 1863 ft. Shad Harper's Garland 1, Wagley sur, sd 1440 ft. Johnson Pet. Co.'s Randolph 2, Dean sur, sd 1862 ft.

SHELBY COUNTY—Chapparral Oil Co.'s Holt 2, Matthew Moore sur, sd 3004 ft. Gulf Ref. Co.'s Pickering Lbr. Co. 2, Patterson sur, dr hard grey lime strks blue shale 3080 ft. Benedum & Trees' Pickering Lbr. Co. 1, Yordt sur, killed flow of hot sw, arr deepend, td 2862 ft.

MONTANA

CARBON—Ohio Oil Co., N. P. 2, 11-7s-21e, dr thru cement 3850 ft.

CASCADE—Neil McQueen et al, making location. L. B. O'Neil, Betts 1, 11-21-3e, abn 1450 ft.

CUSTER—Montana Belle O&G Co., 28-8n-45e, dr 4500 ft last report.

GALLATIN—California Co., Ringling 1, 35-5n-7e, dr up bailer, 2670 ft.

GARFIELD — Montana Corp., 36-16n-38e, carry cas below 1350 ft.

GLACIER—Jos. Drumheller et al, Yunck 1, nw 1-34-6w, standing. Hannah-Porter et al, 22-36-12, mvg in. Wm. O'Haire et al, 4-34-6w, mvg in.

HILL—Jones Oil Co., Brown's Coulee 1, nw 32-34-14e, resumed at 1500 ft.

LIBERTY — Square Deal Oil Co., Federal Land Bank 1, sw 1-32-7e, dr 3250 ft. Thompson, Thompson 1, 7-34-4e, prep to resume dr 1900 ft. Nortland O&G Co., 32-33-5e, lcn.

MUSSELSHELL — Minnesota-Flatwillow, Ivanhoe Dome 1, 7-11-31, ready to spud.

PETROLEUM—Minnesota-Flatwillow 2, sw 5-12-25e, sd wait for end of litigation, td 1473 ft. Minnesota-Flatwillow 3, se 5-12-25, rigged. Oregon-Flatwillow Oil Co., 3-13-26, bldg, derrick.

PONDERA—Butte Synd., Meuli 1, ne 15-29-1w, abn 1890 ft. Valier-Wms Oil Co., 7-29-4w, dr 1400 ft. Hiland Oil Co., Van Daele 1, 35-30-2w, ur.

ROSEBUD—Prairie O&G Co., 28-11n-39e, spdg.

SHERIDAN—Cheyenne O&G Co., nw 15-35-53, dr 1350 ft.

SWEETGRASS—Carter Oil Co., Six Shooter 1, 17-3n-19e, ur 6⅝-inch at 3750 ft, td 3900 ft. Shoshone Cons. Oil Co., 23-2n-15w, dr 5785 ft.

TETON—L. B. O'Neil, 16-25-5w, rig pulled in, fsh 2200 ft. Mitchener et al, Rondas 1, 9-23-1w, set 6-inch and dr ahead 1450 ft. Rocky Mtn. O&G Co., Salmond 1, ne 4-23-8w, run 10-inch to 850 ft. Earl Oil Corp., 22-22-8w, re-dr 500 ft.

TOOLE—Monalta Oil Co., Ltd., Buckley 1, se 1-37-4w, repair bull wheels 2100 ft. Anaconda Pete Co., ne 19-36-2e, sd 1635 ft. Mahan et al., Lee 1, 10-31-1w, try water so at 2264 ft. International Royalty Holding Co., Pederson 1, sw 21-35-1e, stand 1905 ft. International Roy.

WILDCATS FROM ALL SECTIONS

WEST TEXAS

Completions

Company, Well and Loctaion	Initial Production Bbls.	Depth
CROCKETT COUNTY—		
W. A. Moncrief et al, Todd 1 (Sec. 29)	*	1670
GLASSCOCK COUNTY—		
Landreth & Tidal Oil Co., Houston 1	*	3465
PECOS COUNTY—		
Milham Corp., McDonald 1	*	1650
Merrick & Bristow, Neville 1	*	1670

ANDREWS COUNTY—Deep Rock Oil Co. et al's Ogden 1, elev 3206 ft, top salt 1750 ft, dr 3185 ft.

BORDEN COUNTY — Louisiana Oil Ref. Corp.'s Miller 1, elev 2541 ft, top salt 1080 ft, fsh 3185 ft. W. A. Moncrief & Humble's Munger 1, elev 2433 ft, top salt 1090 ft, ur 2425 ft. Teas & Wheeler's Long 1, elev 2516 ft, top salt 1030 ft, dr 3600 ft.

BREWSTER COUNTY—Ed. W. Bateman & Co.'s Neville 1-A, sd 2274 ft. Brewster Oil Co.'s Fee 1, sd 1930 ft. E. L. Chapman et al's Skinner 2, set 8¼-inch cas 900 ft J. C. Grastorf et al's Redfield 1, machine.

COCHRAN COUNTY — Continental Oil Co.'s Slaughter 1-A, elev 3793 ft, pb from 5000 to 4885 ft and testing 6 bbls oil daily. Westbrook & Co.'s Slaughter 1, set 8¼ cas 2700 ft.

CONCHO COUNTY—D. Lamb et al's H. L. Mosely 1, machine.

COKE COUNTY — Mid-Kansas O&G Co.'s Lackey 1, elev 2152 ft, sd 4139 ft.

CROCKETT COUNTY — California Co.'s Powell 3, elev 2725 ft, top salt 1080 ft, showing oil and water 2577-2632 ft; Shannon 1, rig. Cushing Ref. & Gasoline Co.'s Powell 3, dk. Empire G&F Co.'s Shannon 1, rig. Lewis & Daniels' Pecos River Bed 1, elev 1967 ft, sd hfw 1335 ft. T. P. Coal & Oil Co.'s Shannon 1, rig.

CULBERSON COUNTY — Grisham-Hunter Corp.'s Fee 1, dr 1770 ft; Seay 1, rig. Hickey et al's Finley 1, elev 3916 ft, sd 2275 ft. Scott & Dittman's Miller 1, elev 4059 ft, sd 3508 ft. West Texas Oil & Explo. Co.'s McGregor 1, sd 825 ft.

ECTOR COUNTY—Penn-Humble-Atlantic's York 1, rig.

EL PASO COUNTY — Inter-Coastal Oil Co.'s Malone 1, sd 1330 ft.

FISHER COUNTY—Cranfill-Reynolds Co.'s Barrett 1, dr 2500 ft; D. M. Bledsoe 1, lcn. Landreth Prod. Corp.'s Cooper 2-A, sd 1275 ft. Magnolia Pet. Co.'s Lee 1, elev 1827 ft, ur 3465 ft. Mid-Kansas-Phillips Pet. Co.'s Stephenson 1-A, top lime 3228 ft, co 3285 ft. Mid-West Explo. Co.'s Steele 1, elev 1867 ft, testing oil prod. 3192-93 ft. Henry Riley et al's Veatch 1, elev 1879 ft, sd hfw 3300 ft. Roeser-Pendleton & Amerada's Waco Bank 1, dr 810 ft.

GAINES COUNTY — Cranfill-Reynolds Co. & La. Oil Ref. Corp.'s Ralph 1, dr 415 ft.

GARZA COUNTY—H. C. Cate & Pandem Oil Corp.'s Stoker 1, dr 420 ft. Thompson et al's Tuffing 1, elev 2277 ft, sd 2610 ft.

GLASSCOCK COUNTY — California Co.'s Currie 3, pipe stuck, td 2177 ft; Jones 1, dk. Glasscock Bros. et al's Edwards 1, sd 1475 ft. Kirby Pet. Co. & Arkansas Fuel Oil Co.'s Baker 2, dr 330 ft. Lion Oil Ref. Co.'s Coffee 2, dr 1300 ft; Coffee 3, dr 1110 ft. Shell Pet. Corp.'s Coffee 1, top lime 2053 ft, pb from 2280 to test oil pay 2098-2137 ft; Kloh 1-B, (Sec. 11) dr 1915 ft. Simms Oil Co.'s Coffee 1, dr 1910 ft. E. L. Smith Oil Co.'s Coffee 2, spudded and sd. Sun Oil Co.'s Phillips 3, elev 2637 ft, testing pay 2083-2220 ft; Phillips 4, elev 2652 ft, dr 815 ft. World Oil Co.'s McDowell 2-C, rig.

TOM GREEN COUNTY — Fitzgerald & Smith's Bennett 1, sd 2430 ft. Fuhrman Pet. Corp.'s Lewis-Wardlaw 1, machine.

HOCKLEY COUNTY — World Oil Co.'s Ellwood 1, elev 3363 ft, top salt 2157 ft, sd 3250 ft.

HOWARD COUNTY—Meriwether Oil Co.'s Eva Smith 1, sd 1220 ft.

HUDSPETH COUNTY — The California Co.'s University 1, elev 5833 ft, ur 2829 ft. Richardson et al's Thaxton 1, spudded and sd.

IRION COUNTY—Banner Oil Co.'s Nutt 2, lcn. Brown & Fox's Tankersley 2, machine. J. B. Crawford et al's Nutt 1, sd 1105 ft. Carl G. Cromwell et al's Fuller 1, dr 250 ft. Irion Oil Co.'s Tankersley 1, sd 377 ft. Kingwood Oil Co.'s Sugg 1, elev 2334 ft, dr 7725 ft. J. A. Starkweather et al's Lindley 1, sd 1150 ft. P. H. Williams et al's Ashe 1, fsh 4705 ft.

JONES COUNTY—Adsit et al's Swenson 1-A, elev 1521 ft, ur 2250 ft. Cranfill-Reynolds Co. & California Co.'s Stephens 1, dr 300 ft. Mid-Tex O&G Co.'s King 1, sd 1520 ft; W. A. Minter 1, lcn. F. E. Shaheen et al's King 1, ur 1650 ft.

KENT COUNTY—White & Smith's Pursley 1, sd 300 ft.

LOVING COUNTY — Humble Unit Plan's Kloh 1-C, elev 2814 ft, top salt 1130 ft, fsh 1670 ft. Independent O&G Co.'s Wheat 1, dr 410 ft. Lockhart & Co.'s Allen 3, top salt 725 ft, dr 1200 ft; Hubbard 3, elev 2691 ft, top salt 775 ft, co 4036 ft; Hubbard 4, elev 2694 ft, top salt 710 ft, dr 2700 ft; Wheat 1-H, (dd) dr 4580 ft.

LYNN COUNTY—Hart Oil Corp. & McCamey's Edwards 1, elev 3128 ft, top salt 2140 ft, sd hfw 4835 ft.

MENARD COUNTY — C. G. Cromwell & Jas. Duffey's Winslow 2, rig.

MITCHELL COUNTY—Gibson-Johnson et al's Scott 2, spudded and sd; Scott 3, lcn. Teas & Wheeler's Radford 1, elev 2223 ft, sd 4310 ft.

NOLAN COUNTY — Gibson & Johnson's Bond 1, elev 2126 ft, ur 1425 ft. Phillips Pet. Co.'s Plunkett 1, elev 2423 ft, ur 4225 ft.

PECOS COUNTY — Anderson-Prichard & Texas Co.'s Wright 1, machine. Anna Bell Oil Co.'s Hollingsworth 1, machine. E. W. Bateman & Co.'s Cordova 1, dr 875 ft. E. L. Chapman & J. D. O'Mara's W. C. Streety 1, set 10-inch cas 825 ft. Cosby et al's Ft. Stockton 1, elev 2941 ft, top salt 1140 ft, sd 2020 ft. Cosden Oil Co.'s McDonald 1, sd 225 ft. Cromwell & L. C. Harrison's White & Baker 1, dr 210 ft. Dittman Drlg. Co. et al's Cunningham 1, lcn. Dixie Oil Co.'s McKenzie 1, lcn. Henshaw Bros. (Angelo Pet. Inc.'s) McDonald 1, elev 2425 ft, top salt 690 ft, sd 1425 ft. Humble O&R Co.'s Cunningham 1, machine. Independent O&G Co. & Rowan-Tong, Inc.'s McDonald 2, elev 2478 ft, top salt 720 ft, sd 1645 ft; Phelps 1, dr 155 ft. Jayhawk Pet. Co.'s Price 1, elev 2310 ft, top salt 655 ft, show gas 1380 ft, dr 1425 ft. J. L. Kennedy et al's Kennedy 1, elev 3217 ft, dr 1385 ft. Landreth Prod. Corp.'s Cunningham 1, dr 1020 ft; McDonald 1-B, fsh 1435 ft; Ely Smithpeter 1, top salt 827 ft, fsh 1655 ft. Mazda Oil Corp.'s Cordova 1, rig. W. A. Moncrief et al's Clarkson 1, top salt 875 ft, sd 1832 ft. Moncrief & L. C. Turman's Sullivan 1, lcn. R. E. Moore et al's Arnold 1, sd 1295 ft. Geo. B. Morgan et al's Toberg 2, elev 2311 ft, top lime 1200 ft, pb from 1285 to test oil 1273-75 ft; Tippett 1, spudded and sd. H. T. Odneal et al's Jas. Power 1, lcn. J. D. O'Mara et al's Bennett 1, sd 875 ft. S. B. Owen-Cranfill-Reynolds & Monte Warner's Masterson 1, elev 2425 ft, tested 700 ft oil in hole 1249-53 ft, dr 1305 ft. Phillips Pet. Co.'s Courtney 3, machine. Rector Oil Co.'s State 1, elev 2469 ft, dr 950 ft. M. M. Rowan et al's Sherbino 1, elev 2884 ft, dr 2470 ft; University 1, making oil and water, pb from 2044 ft. Schumaker et al's Williams 1, elev 2980 ft, dr 2330 ft. Sides & Cloyd's Blackstone-Slaughter 1, dr 250 ft. Texas Co.'s Graef 1, lcn. Tower & McKanna, Inc.'s University 1, (Sec. 14), sd hfw 2049 ft. Transcontinental's University 1, elev 2552 ft, dr 4645 ft. Trees Oil Co.'s J. C. Trees 2, elev 2476 ft, top salt 2443 ft, dr hfw 2895 ft; Trees 3, cellar. F. P. Zoch & Eastland Oil Co.'s Cordova 1, fsh 510 ft.

PRESIDIO COUNTY—TP Coal & Oil Co.'s Bogel 1, dr 2450 ft.

REAGAN COUNTY—Big Lake Oil Co.'s University 1-C, dr black shale 7100 ft; University 2-C, dr lime 7475 ft; University 3-C, killing oil and gas flow with 80 scks baroid, td 8379 ft; University 4-C, flowed 327 bbls oil and 6 million feet gas, fsh tools 8220 ft. Group One Oil Corp. (Conoco's) University 2-B, cem 20-inch cas 67 ft; University 3-B, cem 20-inch cas 104 ft. Henshaw-Brann & Thomas' Hughes 1, dr 200 ft. Skelly Oil Co. & Utah Southern's University 5, elev 2880 ft, top salt 1300 ft, pb from 3094 to 3085 ft.

REEVES COUNTY—Mack Best et al's McKinney 1, dr 450 ft. Hansford et al's Williams 1, spudded and sd. Slack & Fink's Brooks-Huling 1, sd 500 ft. Southern Crude Oil Pur. Co.'s Kloh 1, dr salt 4820 ft. Thompson et al's Eddins 1, fsh 5658 ft. White et al's Hersheusen 1, elev 3244 ft, top salt 2670 ft, dr 3330 ft.

RUNNELS COUNTY—Gibson & Johnson's Johnson 1, rig; Wood 1, dr 1790 ft.

SCHLEICHER COUNTY — Ft. McKavitt Oil Co.'s Tisdale 1, co 3500 ft. Phillips Pet. Co.'s J. A. Whitten 1, elev 2333 ft, dr 5560 ft. Geo. T. Wilson et al's Page 1, spudding.

SCURRY COUNTY—J. G. Armand & Camp Springs O&R Co.'s Quinn 1-A, sd 2567 ft. Byrd & Harmon's Murphy 1, elev 2298 ft, top salt 775 ft, sd 1732 ft. Cottingham & Briscoe et al's Truss 1, elev 2664 ft, top salt 1050 ft, top lime 2175 ft, dr hfw 3140 ft. R. B. Pender O&G Co.'s Davis 1, elev 2208 ft, top salt 445 ft, fsh 4065 ft. E. L. Smith Oil Co.'s Mooar 1, rig.

STERLING COUNTY—S. B. Owens, Inc.'s, Tweedle 1, spudded and sd.

SUTTON COUNTY — Independent O&G Co.'s Wilson 1, lcn. Independent-Sun Oil Co.'s Allison 1, elev 2291 ft, dr 2860 ft. Phillips Pet. Co.'s Holman 1, elev 2277 ft, top lime 2317 ft, dr by tools 6633 ft. L. G. Priest et al's Allison 1, elev 2238 ft, sd 3968 ft.

TAYLOR COUNTY — Adams-Ferguson & Hobbs' J. L. Lowe 1, elev 1970 ft, lcn. Condor Pet. Co.'s Allen 1, lcn. J. B. Jameson et al's Webb 1, elev 1905 ft, dr 4975 ft.

TERRELL COUNTY—Big Bend Oil Corp.'s Bassett 1, elev 2396 ft, sd 1150 ft. Milham Corp.'s Bassett 1, elev 2270 ft, fsh cas 5400 ft. Transcontinental's M. H. Goode 1, rig.

VAL VERDE COUNTY — Phantom Oil Co.'s Ingram 1, dr 885 ft.

WARD COUNTY — Atlantic & Delmar's Hayzlett 4, co after shot, 2500 ft; Hayzlett 5, dr 1500 ft. Continental Oil Co.'s Sealy 2-A, elev 2611 ft, top salt 1088 ft, top lime 2080 ft, pb from 3358 to 2500 ft to try for gas. Cranfill-Reynolds Co.'s Williams-Robeson 1, elev 2516 ft, sd 2495 ft. C. C. Dorr et al's Costley 1-A, skid rig. Gulf Prod. Co.'s O'Broen 7, dr 2250 ft. L. C. Harrison Oil Co.'s Wristen 1, dr 1400 ft. J-H-L Oil Co.'s Hayzlett 3, rig. Penn Oil Co. & Atlantic's Cooper 1, rig; Bennett 2, rig. Shell Pet. Corp.'s Sloan-Owen 1, top salt 765 ft, showing oil and gas, dr 2790 ft. Shipley Oil Corp.'s Monroe 1, sd 565 ft; Hayzlett 3, top salt 725 ft, dr 2500 ft; Hayzlett 4, top salt 765 ft, dr 2500 ft; Hayzlett 5, rig. Sun Oil Co.'s Sealy 1, dk. Texo Oil Co.'s Redman 1-A, elev 2717 ft, set cas 1190 ft.

WINKLER COUNTY — M. J. Bashara et al's Fee 2, lcn. V. T. Bolin et al's Brown 2, sd 2832 ft. Champlin-Winkler Oil Corp. (was Liner's) Campbell 1, elev 2884 ft, top salt 1155 ft, sd 2750 ft. Sun Oil Co.'s Sealy 2, dk.

ABBREVIATIONS

NOTE—The following is the explanation of abbreviations, signs, etc., used in completion and wildcat reports; *—dry hole, abandoned well; ‡—salt water; †—junked and abandoned; ¶—million feet of gas; abn—abandoned; bbls—barrels; b.s.—basic sediment; cas casing; co—cleaning out; dk—derrick; dr—drilling; fsh—fishing; ft—feet; in-inches; lcn—location; m—milling; n, s, e, w—north, south, east, west; r—reaming; sd—shut down; sdtr—sidetracking; sp—spudding; sr—straight reaming; std—standardizing; sw—salt water; td—total depth; ur—underreaming; wo—workover; wosr—waiting on standard rig.

NORTH LOUISIANA

Company, Well and Location	Initial Production Bbls.	Depth
CADDO PARISH—		
D. C. R. Oil Co., Oden 2, 20-19-14	*	2802
Ray-Dawes Drilling Co., Hunter A-4, 9-19-14	75	2438
Standard Oil Co. of La., Caddo School Board 2, 16-19-14	*	2682
Henderson 3, 7-19-14	*	2457

BOSSIER PARISH—Corbett et al's Murff 1, 16-17-11, sd 990 ft. Lanier et al's LeRosen 1, 26-21-14, lcn. Nell & Lanier's Biedenharn 1, 23-21-14, bailing to test 1 ft sand showing little oil and gas, td 998 ft. Walker et al's Autrim 1, 28-22-13, arr test 3184 ft. J. Laskin, Tr.'s Pardee 2, 3-22-11, dr 1140 ft. Morgan et al's Weatherbee 2, 21-19-11, dr 100 ft. Nesbit et al's Burt 1, 20-19-13, lcn; Leonard 1, 20-19-13, setting 12¼-inch cas 225 ft. Sam Gold et al's McFarlin 1, 7-19-13, dk. Deleware-La. Dev. Co.'s Bolinger 5, 31-23-11, lcn. Muslow Oil Co.'s Barnett 1, 25-23-11, old well arr deepen, depth not given. Goodman-Johnson's Martin 1, 26-23-12, lcn. Muslow Oil Co.'s Marks Meyer 1, 36-23-12, old well arr deepen, depth not given; Peyton 1, 30-23-11, old well arr deepen, depth not given.

CADDO PARISH—Sam Gold et al's Hunter 3, 17-19-14, 1000 ft fluid in hole, 90 per cent sw, bailing, td 2428 ft; Hunter 4, 17-19-14, lcn. S. T. Onyett's Dixon 1, 10-19-14, wosr td 2444 ft. I. N. Pharris' Oden 1, 19-19-14, sd in shale 2382 ft. Ohio Oil Co.'s Hunter 4, 17-19-14, dk; Hunter 6, 17-19-14, cored sw sand, sd wo 2482 ft. Standard Oil Co. of La.'s Henderson 3, 7-19-14, dry abn, td 2457 ft; Hunter 3, 17-19-14, set 6-inch cas 2360 ft; Hunter 8, 17-19-14, dk; School Board 2, 16-19-14, dry abn, td 2682 ft. Lide et al's Levee Board 1, 24-19-15, topped red shale 2300 ft, tested dry 2410 ft, sd repr bailer 2418 ft. Gulf Ref. Co.'s Oden 5, 18-19-14, ta 2425 ft; Oden 6, 18-19-14, dk. Haynes Bros.' Oden 2, 20-19-14, ta 2505 ft. Texas Co.'s Hunter 3, 8-19-14, plugged back to 2428 ft, tested sw, ta 2428 ft, td 2448 ft; Hunter 6, 9-19-14, set 6-inch cas 2400 ft, bailing to test, td 2436 ft; Sibley 1, 9-19-14, lcn; Sentell 1, 9-19-14, bldg dk. Old River Oil Corp.'s Byrd 1, 15-19-14, rig up. Eylers O&G Co.'s Sentell 1, 9-19-14, arr test, td 2447 ft. Ray-Dawes Drilling Co.'s Hunter A-4, pumping 75 bbls oil, td 2438 ft. Planters O&G Co.'s Pittman 1, 23-19-14, sd wo 2583 ft. Adams & Despot's Dickson 1, 10-19-14, tested dry, show oil 2445 ft, broken sand 2436 to 2445 ft, dr 2455 ft. Fitzsimmons Drilling Co.'s Sentell 1, 10-19-14, moving in rig. Fred H. Ryan's Dickson Hrs. 1, 3-19-14, set 10-inch cas 105 ft. Standard Oil Co. of La.'s School Board 4, 16-19-14, rig up. R. W. Norton's Hill 1, 33-23-16, set 9-inch cas 3680 ft, tested sw 3728 ft, arr deepen.

CALDWELL PARISH—La. Oil Ref. Corp.'s La. Central O&G Co. 1, 31-12-3e, rig up.

CLAIBORNE PARISH — Leue Oil Co.'s Taylor 1, 16-22-8w, dk. El Dorado Chief Oil Co.'s Simmons 1, 27-20-7w, sd in shale and bldrs 2240 ft. Triangle Drilling Co.'s Kilpatrick 1, 7-19-5w, sd changing to heavy rig, td 1350 ft.

DE SOTO PARISH — Benson O&G Co.'s Harris 1, 6-10-13, dr 270 ft; Hill 1, 3-10-13, dr 240 ft. R. O. Roy's Farmer E-1, 5-13-13, lcn. P. J. Becker's Tull 1, 23-21-13, fsh for ds 2475 ft. L. M. Moffit, Tr.'s, Boatright 1, 3-10-13, sd wo 3129 ft. Longstreet Synd.'s Ramsey 1, 33-13-16, ta 2802 ft.

FRANKLIN PARISH—Franklin O&G Co.'s O'Brien 1, 17-13-9e, rig up. Davis et al's Moore 1, 12-11-6e, sd 1430 ft.

MOREHOUSE PARISH—Rainbow Oil Co.'s Louisville Cooperage 1, 33-22-8e, dk. P. J. White's Chess Wymond 1, 32-19-6e, sd wo 3025 ft.

NATCHITOCHES PARISH — S. D. McDaniels' Clark-Morse 1, 23-5-6w, sd wo 2536 ft. Robeline O&G Co.'s Cassady 1, 7-8-9w, ds stuck 3230 ft. Nichols & Wilder's Clark 1, 10-10-8w, rigged up wo.

RAPIDES PARISH—Ayers Bros.' Wicklipp 1, 9-5n-2w, sd 900 ft.

RED RIVER PARISH — W. D. Ball's Krumbholz 1, 32-14-10, sd 1050 ft. Benedum & Trees' Franklin 1, 29-11-9, dr lime 3616 ft. Eylers O&G Co.'s Johnson 1, 17-12-10, dr 1015 ft; Chaffraix 2, 30-12-10, arr to test, td 2706 ft. LeGrande et al's Sample 1, 11-14-11, rig up. Triple Oil Co.'s Pollock 1, 33-13-11, wosr, td 2470 ft.

RICHLAND PARISH—Austin & McDonald's Millsaps 2, 17-17-6e, sd wo 2697 ft; Millsaps 3, 16-17-6e, sd wo 2477 ft; Millsaps 4, 16-17-6e, lcn; Millsaps 5, 8-17-6e, dk; Hunt 1, 13-17-5e, dk. Industrial Gas Co.'s Hodge 1, 7-16-7e, dr 50 ft. A. T. Davidson 1, 6-16-7e, dr 344 ft; Davidson A-1, 6-16-7e, rig u,,. Ruston Drilling Co.'s Hodge 1, 7-16-7e, dr 50 ft. Triangle Drilling Co. & Woodley Pet. Co.'s Cumpton 1, 16-17-7e, losing returns 56 ft. S. R. Humble's Binion-Sartor 1, 22-17-6e, heading well, td 2481 ft. Palmer Corp.'s Eubanks 1, 26-17-6e, tested 1 mil ft gas 2450 ft, dr 2486 ft; Miles 2, 12-17-6e, set 6-inch cas 2316 ft. Northern La. Gas Co.'s Boykin 4, (relief well 3), 20-17-6e, arr pump water to kill crater, td 2398 ft. Shreveport Contractors' Buie 1, 17-15-7e, old well arr deepen.

SABINE PARISH—Sabine O&G Co.'s Anderson 1, 19-8-12, dr 1250 ft. R. L. Gay, Tr.'s Bowman-Hicks 5, 14-7-14, set 8⅝-inch cas 2090 ft; Long-Bell Lbr. Co. 1, 26-8-14, fsh at 3533 ft; Sabine Lbr. Co. 2, 23-7-14, dr hard lime 3710 ft; Bowman-Hicks A-1, 34-8-12, cored into oil sand 2405 ft. A. H. Tarver et al's Long-Bell Lbr. Co. 1, 29-8-13, dr 3548 ft.

UNION PARISH—Fred Stovall's Stovall 1, 32-23-4e, rig up.

WEBSTER PARISH—F. M. Fuller's Monzingo 1, 27-18-8e, rig up. P. Hudson's Gardner 1, 1-22-11, wo 2734 ft; Gardner 2, 1-22-11, dk; B. L. Slack B-1, 36-23-11, lcn. Magnolia Pet. Co.'s Scroggins 2, 1-22-11, wosr 2708 ft; McCook & Hibbler 1, pulled 8⅝-inch cas, hole cleaned, arr set 5¾-inch cas to test after 11 ft rich oil sand cored 6947-58 ft, td 6958 ft; Kight 1, 33-23-9, wosr 2692 ft; Bailey 1, 29-23-9, arr deepen, td 2774 ft. Sarepta Oil Co.'s Gardner 1, 1-22-11, wtg on 6-inch cas to set 2681 ft. Paul C. Warren's Martin 1, 20-20-9, dr 180 ft. John F. Woodman's Boyd 1, 9-23-11, lcn abn, will not drill. J. W. Clark, Tr.'s Wise 1, 30-23-9, wosr, td 2754 ft.

ARKANSAS

Company, Well and Loctaion	Initial Production Bbls.	Depth
UNION COUNTY—		
E. M. Jones, Hardy & Murphy 1, 34-19-14	*	4060
Loutre Shingle Co. 1, 17-19-14...	*	3505

ASHLEY COUNTY—Ark. Fuel Oil Co.'s Crossett Lbr. Co. 1, 1-19-7, rig up. J. C. Marcum's McCarty 1, 10-19-4, sr to bottom 3205 ft.

COLUMBIA COUNTY — L. F. Parker's Fedoks 1, 25-19-22, dr 1150 ft. Talbert & Markle's Copeland 1, 31-19-19, dr 3651 ft. La. Oil Ref. Corp.'s Green 1, 22-15-19, arr ds test 2484-90 ft.

DREW COUNTY—McClintock & Goedke's Ogle 1, 33-13-5, fsh ds 2530 ft.

FAULKNER COUNTY—Gold Creek O&G Co.'s Stermer 1, 17-4-13, TA 3872 ft.

FRANKLIN COUNTY — Ozark Nat. Gas Corp.'s McElroy 1, 15-8-27, lcn.

GARLAND COUNTY—H. H. Given's Garrett 1, 1-13-19w, dr with tools 3250 ft.

GRANT COUNTY—Jones & Watkins' Meek 1, 5-4-11, TA 1400 ft.

JOHNSON COUNTY—Blackwell O. & G. Co.'s Wyver 1, 21-8-25, arr plug and perf, td 5360 ft.

LINCOLN COUNTY — Pine Prairie O&G Co.'s Carter 1, 33-10-6, arr resume dr 2176 ft.

LITTLE RIVER COUNTY—Grote et al's Allen 1, 31-12-31, ta 2941 ft. C .F. McDonald's Black 1, 12-13-29, sd 1541 ft. Buck Oil Co.'s Taafe 1, 25-12-32, dr broken lime 1783 ft.

MADISON COUNTY — Phillips Pet. Co.'s Skinner 1, 11-14-25, arr abn, td 1368 ft.

MILLER COUNTY—Lenz et al's Person 1, 13-15-26, dr 3110 ft.

OUACHITA COUNTY—Copenhaver et al's Warnick 1, 2-15-17, sd 2190 ft. Chas. McDonald's Fogle 1, 18-14-16, sd wo 2301 ft. Wesson et al's Booth 1, 12-15-19, sd 2203 ft. Artex Oil Co.'s Smith 1, 31-15-17, lcn.

POPE COUNTY — Cosden Oil Co.'s Mo. Pac. R. R. 1, 13-9-19w, rig up.

PRAIRIE COUNTY — Transcontinental Oil Co.'s Novack 1, 36-2-6, cemtd 8¼-inch cas 2058 ft, td 2060 ft.

SEBASTIAN COUNTY—Lavaca O&G Co.'s Cason 3, 21-8-30, dk. J. O. Ingram 7, 22-8-30, lcn. A. G. Williams, Jr.'s Patterson 1, 27-8-30, lcn.

UNION COUNTY—Federal Pet. Co. et al's Fee 1, 5-17-12, tested dry through ds 2330 to 2355 ft. Frank Staples' Ainsworth 1, 8-19-16, cemtd 12½-inch cas 58 ft. S. Arrendale's Gallagher & Nelson 1, 18-18-17, sd 2268 ft. E. M. Jones' Loutre Shingle Co. 1, 17-19-14, dry abn td 3505 ft. Hardy & Murphy 1, 34-19-14, dry abn, td 4069 ft. W. M. Coates, Tr.'s McDuffie 1, 32-19-16, 6⅝-inch cas set 3934 ft, td 4056 ft, bailed, tested 2000 ft sw, pulled liner 4056 ft, attempted run test tool with pckr on ds to test bottom 7 ft of hole, pck hung 20 ft off bottom, opened tool, nothing showed, will wash to bottom, try another test. T. J. Woodley's First National Bank 1, 34-19-18, dk. O. W. Estes' Felsenthal 1, 2-18-15, sd wo 2191 ft. Ark. Drilling Co.'s Norris 1, 17-18-12, dr gumbo 3002 ft. Shell Pet. Corp.'s Carroll 1, 19-18-16, coring 3358 ft. E. L. Chapman's Thompson 1, 4-17-15, lcn. Marine Oil Co.'s Thompson A-3, 10-18-13, rig up.

WASHINGTON COUNTY—Lincoln Lease Holding Co.'s Townsite 1, 30-15-32, sd repr rig 1050 ft. C. H. Willoughby's Jones 1, 34-16-30, sd 1900 ft. O'Hara & Shetterley's Boyd 1, 12-16-32, sd 150 ft.

WHITE COUNTY—Letona Synd.'s Letona 1, 35-9-8, dr caving shale 3500 ft.

VAN BUREN COUNTY — J. S. Martin's Scanland 1, 5-9-13, sd 50 ft.

EAST TEXAS

BOWIE COUNTY—Hooks O&G Co.'s Rosenberg 1, King sur, ta 3086 ft.

CAMP COUNTY—Rogers et al's Enfelt 1, Montgomery sur, sd 1920 ft.

RED RIVER COUNTY—D. M. Buffington's Hoosier 1, Hughart sur, sd 1863 ft. Shad Harper's Garland 1, Wagley sur, sd 1440 ft. Johnson Pet. Co.'s Randolph 2, Dean sur, sd 1862 ft.

SHELBY COUNTY—Chapparral Oil Co.'s Holt 2, Matthew Moore sur, sd 3004 ft. Gulf Ref. Co.'s Pickering Lbr. Co. 2, Patterson sur, dr hard grey lime strks blue shale 3080 ft. Benedum & Trees' Pickering Lbr. Co. 1, Yordt sur, killed flow of hot sw, arr deepend, td 2862 ft.

MONTANA

CARBON—Ohio Oil Co., N. P. 2, 11-7s-21e, dr thru cement 3850 ft.

CASCADE—Neil McQueen et al, making location. L. B. O'Neil, Betts 1, 11-21-3e, abn 1450 ft.

CUSTER—Montana Belle O&G Co., 28-8n-45e, dr 4500 ft last report.

GALLATIN—California Co., Ringling 1, 35-5n-7e, dr up bailer, 2670 ft.

GARFIELD — Montana Corp., 36-16n-38e, carry cas below 1350 ft.

GLACIER—Jos. Drumheller et al, Yunck 1, nw 1-34-6w, standing. Hannah-Porter et al, 22-36-12, mvg in. Wm. O'Haire et al, 4-34-6w, mvg in.

HILL—Jones Oil Co., Brown's Coulee 1, nw 32-34-14e, resumed at 1500 ft.

LIBERTY — Square Deal Oil Co., Federal Land Bank 1, sw 1-32-7e, dr 3250 ft. Thompson, Thompson 1, 7-34-4e, prep to resume dr 1900 ft. Nortland O&G Co., 32-33-5e, lcn.

MUSSELSHELL — Minnesota - Flatwillow, Ivanhoe Dome 1, 7-11-31, ready to spud.

PETROLEUM—Minnesota-Flatwillow 2, sw 5-12-25e, sd wait for end of litigation, td 1473 ft. Minnesota-Flatwillow 3, se 5-12-25, rigged. Oregon-Flatwillow Oil Co., 3-13-26, bldg, derrick.

PONDERA—Butte Synd., Meuli 1, ne 15-29-1w, abn 1890 ft. Valier-Wms Oil Co., 7-29-4w, dr 1400 ft. Hiland Oil Co., Van Daele 1, 35-30-2w, ur.

ROSEBUD—Prairie O&G Co., 28-11n-39e, spdg.

SHERIDAN—Cheyenne O&G Co., nw 15-35-53, dr 1350 ft.

SWEETGRASS—Carter Oil Co., Six Shooter 1, 17-3n-19e, ur 6⅝-inch at 3750 ft, td 3900 ft. Shoshone Cons. Oil Co., 23-2n-15w, dr 5785 ft.

TETON—L. B. O'Neil, 16-25-5w, rig pulled in, fsh 2200 ft. Mitchener et al, Rondas 1, 9-23-1w, set 6-inch and dr ahead 1450 ft. Rocky Mtn. O&G Co., Salmond 1, ne 4-23-8w, run 10-inch to 850 ft. Earl Oil Corp., 22-22-8w, re-dr 500 ft.

TOOLE—Monalta Oil Co., Ltd., Buckley 1, se 1-37-4w, repair bull wheels 2100 ft. Anaconda Pete Co., ne 19-36-2e, sd 1635 ft. Mahan et al., Lee 1, 10-31-1w, try water so at 2264 ft. International Royalty Holding Co., Pederson 1, sw 21-35-1e, stand 1905 ft. International Roy.

Hold. Co., Henry 1, 26-35-3e, run 10-inch to 1650 ft. Black Gold Pete Co., Toole 1, nw 22-36-1e, straightening hole at 550 ft. Roxana Drlg. Co., Toole 1, 22-36-1e, run 10-inch at 1500 ft. D. A. MacDonald, Farbo 1, ne 2-37-4w, rig up.

YELLOWSTONE — Montana Corp., 16-4n-26e, dr 1800 ft.

TEXAS GULF COAST

Completions

Company, Well and Loctaion	Initial Production Bbls.	Depth
AUSTIN COUNTY—		
Whittington et al's Lass 1, 4 mi nw Bellville	*	3500
LIBERTY COUNTY—		
Gray-Tex Oil Co., Gardner 1, 20 mi n Liberty	*	3605

AUSTIN COUNTY—O'Hara et al's Ward 1, ½ mi w Peters, sd 3400 ft. Whittington et al's Lass 1, 4 mi nw Bellville, abn 3500 ft shale. Empire's Jackson 1, San Felipe dome, dr 2705 ft shale.

BRAZORIA COUNTY—Thos. Faust et al's Fee 6, 2 mi s Nash, sd 2000 ft. Shell's Blakely-Winston 1, 2 mi ne Danbury, dr 1575 ft sandy shale. Mills Bennett Prod. Co.'s Allen 1, Allen dome, ru.

CHAMBERS COUNTY—Pure's Lost Lake 3, dr 3960 ft sand; Mayes 1, Lost Lake, swabbing at 2850 ft; Mayes 4, Lost Lake, dr 2817 ft; Mayes 5, pulling screen to reset at 2793 ft; Mayes 6, temp. abn at 2215 ft; Mayes 7, dr 2320 ft gbo; Mayes 8, dr 2075 ft gbo.

FORT BEND COUNTY—Gulf's Trone 12, Long Point, abn 6250 ft; Moore 19, Moores Field, dr 6600 ft shale.

HARRIS COUNTY — Cranfill-Reynolds' Brown 1, w Goose Creek, dr 2500 ft. Humble's Simms-Smith 76, Goose Creek, dr 4107 ft sticky shale; Siadous 1, Mykawa, completed as 25 million foot gas well; Minnetex 2, Mykawa, dk; Woodburn 2, Genoa, dr 2514 ft sand; Warren 6, Hockley, dr 4665 ft hard sand. Watts Drlg. Co.'s Hubert 1, Mykawa, ru. York & Robertson's Garrett 1, 5 mi se Fauna, sd 1860 ft. Mrs. J. C. Baldwin's Kitzman 1, 2 mi n Cypress, total depth 4055 ft.

JEFFERSON COUNTY — River Oil Co.'s Ship Channel 1, 2 mi se Beaumont, sd 1335 ft. Deep Test Oil Co.'s Faith McFaddin 1, 1½ mi se Spindle Top, sd 4325 ft. Gulf's Bordages 8, Fannett, dr 1360 ft; Burrell 4, Fannett, dr 1350 ft. Vacuum Oil Co.'s Broussard & Hebert 1, 9 mi se Fannett, abn at 5673 ft shale. The Texas Co.-Houston Oil Co.'s Fitzhugh 1, Big Hill, dr 4682 ft hard shale and lime. The Texas Co.'s Pipkin 2, Big Hill, dr 5585 ft in sandy shale with trace of salt water. Rosedale Oil Co.'s Walker 1, Rosedale, sd 2300 ft.

LIBERTY COUNTY—Gray-Tex Oil Co.'s Gardner 1, 20 mi n Liberty, abn at 3605 ft shale. Humble's Sterling 6, Moss Bluff, dr 5280 ft sand and shale. Gulf's Weiser 1, Hankamer, dr 4175 ft; Boyt 3, Hankamer, dr 1830 ft. Harrison Oil Co.'s Balderach 1, N. Dayton, sdtr 4578 ft. Cranfill-Reynolds Co.'s Vajdak 1-A, Esperson dome, dr 4800 ft gbo and shale; Davis 1, Esperson dome, lcn. Campbell et al's Fee 1, 5 mi s Devers, ru.

MONTGOMERY COUNTY—Kelly-Baker's Juergus 1, 3 mi Conroe, dr 3540 ft.

Nebraska

Tulsa.—Although five wells are carried on the active drilling list of Nebraska there are only two wells actually drilling. A drilling report from the state is as follows:

Chase County—Chase Petroleum Company's Ingold 1, C NE Section 24-6n-38w, drilling 4080 feet. Franklin County: U. S. Drilling Company's Brunkle 1, C NW SW NE Section 2-3n-13w, rig. Webster County: Mid-States Exploration Company's Platt 1, C SE Section 3-1n-11w, shut down at 555 feet. Frunas County: Graham Brothers' Edwards 1, NW SW Section 13-2n-22w, drilling 3250 feet; and the Southwestern Petroleum Company's Montague 1, SE SW SW Section 28-1n-22w, shut down 1750 feet.

Large Wyoming Gas Well is Brought Under Control

Riverton, Wyoming.—The Kinney-Coastal Oil Company has succeeded in shutting in its big gas well on the Pilot Butte structure, Fremont County, Wyoming. This well gauged more than 70 million cubic feet when it came into production early in October, and when it was shut in last week had an open flow of 63,448,000 feet with a rock pressure of 1200 pounds. Total depth is 3362 feet in the top of what is now believed to be the first Muddy sand. The well will furnish fuel for drilling additional wells, which will probably be carried to the gas sand with cable tools, and then completed to the lower sands for oil with rotary tools. Location for the second test has been made on the north bank of the river, about 600 feet from the big gas well.

Beginning construction of Pure Oil Company's field camp at Van in Van Zant County, where this company will drill its own acreage and that of other lease owners under co-operative development

ORANGE COUNTY—The Texas Co.'s Polk 1, Port Neches, dr 3070 ft. Gulf's H. J. Stark 1, Port Neches, dr 4280 ft.

VICTORIA COUNTY—Humble's Welder 1, 3 mi se Nursery, dr 5123 ft sticky shale.

WALLER COUNTY — Tolbert & Markle's Young 1, 9 mi s Hempstead, dr 3353 ft shale. Kirby Pet. Co., Rogers 1, San Felipe, dr 3568 ft sand, oil show. W. P. Morris' Chapman 1, 6 mi n Hempstead, dr 200 ft.

WASHINGTON COUNTY — Fuchs et al's Kirke 1, 2 mi w Burton, dr 1825 ft. Brain et al's L. S. Smith 1, 2 mi e Chappell Hill, sd 1537 ft. Owens et al's Weiss 1, 3 mi sw Brenham, dr 3155 ft. Melat et al's Schwartz 1, 5 mi e Independence, dr 1615 ft shale. Penn-Tex Oil Co.'s Kamas 1, sw Brenham, dr 1450 ft gbo. L. D. Steele's Koniecesky 1, dr 1450 ft water sand. Tannehill et al's Estes 1, n Brenham, ru.

SOUTH LOUISIANA

ACADIA PARISH — Yount-Lee Oil Co.'s Houssiere-Latrielle 7, Evangeline, set 7-in cas at 7100 ft; Crowley O. & M. Co. 4, Evangeline, abn at 8145 ft in shale; Y. L. Simms Fee 1, Evangeline, dr 3917 ft hard sand.

ASCENSION PARISH—Gulf's United Lds. Co. 16, Sorrento, dr 2400 ft.

ASSUMPTION PARISH — Gulf's Armalise Planting Co. 1, Napoleonville, lcn. Poor Boys Drlg. Co.'s Labarre 1, moving in material.

CALCASIEU PARISH — J. O. Davis' Mimms 1, Lake Charles, coring sand at 6175 ft. Wilfred Lahay's James 2, 3½ mi s Starks dome, sd 3700 ft.

CAMERON PARISH — The Texas Co.'s Calcasieu Lake A-4, dr 5104 ft sand. Pure Oil Co.'s Yount-Lee Oil Co. 9, Sweet Lake, waiting on rig. Shell's Watkins 6, Black Bayou, preparing to test again at 4885 ft; Watkins 12, Black Bayou, waiting for cement to set, 5225 ft; Watkins 13, Black Bayou, abn at 1250 ft in lime; A. Marceaux 1, Mallard Bay, dr 4350 ft sand and shale. Yount-Lee Oil Co.'s W. H. Stark 1, Johnson Bayou, dr 5500 ft shale and lime.

IBERIA PARISH—Gulf's La. State Z-11, Loreauville, ru. The Texas Co.'s Vermilion Bay A-4, dr 2044 ft sand, dr 2486 ft gbo. Jefferson Lake Oil Co.'s Lake Peigneur 3, dr 670 ft lime rock.

IBERVILLE PARISH—Standard of La.'s Schwing 2, Bayou Blue, flowing 1500 bbls, 75 per cent. water, at 3600 ft; Wilbert 3, Bayou Blue, dk; Wilbert 4, Bayou Blue, lcn.

JEFFERSON DAVIS PARISH — Vacuum Oil Co.'s DeVilbiss 2, Roanoke, dr 6483 ft water sand. Yount-Lee Oil Co.'s Geo. Courtney 1, ru.

LA FOURCHE PARISH — Gulf's Stark 14-A, Thibodaux, abn 1481 ft.

PLAQUEMINES PARISH—The Texas Co.'s Garden Island Bay 3, dr 260 ft. Humble's Cockrell-Moran 1, Lake Grande Ecaille, ru; Lake Washington 1, Lake Grande Ecaille, sdtr 3970 ft.

ST. LANDRY PARISH—Gulf's Chas. Gaudet 2, Port Barre, will set cas to test at 3425 ft. Elbof Explorations' Valmont Ledoux 1, Eunice, dr 1560 ft gbo. Hebert-Baker Oil Co.'s E. D. Fisher 1, dr 1250 ft sandy shale.

ST. MARTIN PARISH — Ohio Oil Co.'s Robt. Martin 4, Hager dome, dr 250 ft. The Texas Co.'s St. Martin Ld. Co. Fee 1, Hager dome, dr 5210 ft sand; St. Martin Ld. Co. Fee 2, Hager dome, dr 4015 ft hard sand; Iberville Ld. Co. 1, Hager dome, dr 1300 ft. Bowie O. & G. Co.'s Begnaud 5, Anse La Butte, dr salt 2100 ft. Yount-Lee Oil Co.'s La. Pet. Co. 5, Anse La Butte, abn 5425 ft salt, Rycade-Humble's State 3, Bayou Bouillon, abn 3673 ft; Bayou Bouillon 7, dr 4625 ft lime and shale.

ST. MARY PARISH—La. Land & Explo. Co.'s Barbour 1, Belle Isle, abn 1225 ft; L. L. Clarke 1, Belle Isle, lcn.

TERREBONNE PARISH—The Texas Co.'s Lake Pelto B-2, lcn; Lake Pelto B-3, driving piling; Four Isle Bayou 2, dr 4370 ft sand; Bay Junop 1, td 4700 ft, fsh; Bay St. Elaine 2, completed gas well; Bay St. Elaine 3, stdg at 1208 ft; Lake Barre-State 3, lcn; Caillou Island 2, bldg dk; Dog Lake Bayou B-1, hit salt at 1735 ft, according to reports; Dog Lake Bayou B-2, ru.

VERMILION PARISH—Atlantic Oil Producing Co.'s Alfred Boudoin 1, abn at 5020 ft in shale.

MISSISSIPPI

Company, Well and Location	Initial Production Bbls.	Depth
RANKIN COUNTY—		
Home Oil Prod. Co., Rainey 1, 13-5-1e	*	2512

ALCORN COUNTY — Alcorn Pet. Co.'s Matthews 1, 14-2-7, sr to bottom preparatory setting 6⅝-inch cas, td 2735 ft.

CHICKASHAW COUNTY — Hightower & Golson's Fleming 1, 20-13-13, arr resume dr, td 1240 ft.

CLAIBORNE COUNTY—Ben White's Old Hen 1, 26-10-4, sd 2004 ft.

HARRISON COUNTY (Gulfport Dist.)—Dalton Oil Co.'s Lopez 1, 15-7-10w, lcn.

HINDS COUNTY (Jackson Dist.) — Mrs. Ella Rawls Reeder's State Land 1, 25-6-1, arr resume dr and arr set 6-inch cas, td 2895 ft. Southern Christian Institute's Fee 1, 29-6-4, cemtd 5 3/16-inch cas, td 1203 ft.

LAFAYETTE COUNTY—F. E. West et al's May 1, 22-10-1w, rigged up wo.

LAUDERDALE COUNTY (Meridian Dist.)—Meridian Nat. Gas Co.'s Mattie Houser 1, 33-8-18, repr crown block, broken while cleanig to bottom, td 2410 ft. Lauderdale O&G Co.'s Lackey 1, 2-7-16, arr set 8¼-inch cas in gumbo 2790 ft, to test 2 feet oil sand encountered 2814 ft, td 2816 ft. J. R. Smith Oil Co.'s Craig 1, 2-6-14, dk.

LINCOLN COUNTY (Brookhaven Dist.)—Lincoln O&G Co.'s Pat Case 1, 21-8-6, arr resume dr, td 1213 ft.

LEE COUNTY — Lee County Pet. Co.'s Hickman 1, 12-8-6, sd 920 ft.

MONROE COUNTY (Amory Dist.)—Amory Pet. Co.'s Hall 1, 8-13-17, bailing out junk and fsh for cas, td 3045 ft. Amory Dev. Co.'s Bourland 1, 2-13-17, arr resume dr, td 2582 ft. Park Bowser's Cowart 1, 2-12-19, curing title, arr resume dr 30 ft.

RANKIN COUNTY (Jackson Dist.)—Home Oil Prod. Co.'s Rainey 1, 13-5-1e, junked abn, td 2312 ft, may skid over, drill new hole.

WARREN COUNTY (Vicksburg Dist.)—Henderson et al's Dornbusch 1, 8-18-15, dr 2231 ft.

WEBSTER COUNTY — Cumberland Oil Co.'s Henley 1, 15-21-11, arr resume dr, td 1865 ft.

YALABOUSHA COUNTY (Water Valley Dist.)—Philp Bros.' James 1, 20-11-5w, dr black shale with layers black slate 3469 ft. J. D. Collette et al's Blackmer 1, 14-11-4w, rigged up ready to sp.

ALABAMA

CHOCTAW COUNTY — Gulf Ref. Co.'s Dease 1, 33-9-2, arr abn below 1100 ft; McCall 1, 30-9-2, arr abn, depth not given; Lassiter 1 and Stallworth 1, no report.

HOUSTON COUNTY—J. R. Sealy's Fee 1, 13-1n-27e, changing to rotary from cable tools, td 3100 ft.

LAMAR COUNTY—Briggs & Knapp's Wefel 1, 25-21-14, set 6⅝-inch cas, arr swab test, show est. 15,000 ft, td 1672 ft.

LAWRENCE COUNTY — Peerson Drilling Co.'s Jacobs 1, 11-7-7, ta 300 ft.

MARION COUNTY — P. J. McAlpine's Clark 1, 29-11-14, lcn.

MORGAN COUNTY—Albany-Decatur O&G Co.'s English 1, 6-6-4, fsh for cas, td 4130 ft.

SUMTER COUNTY—B. W. Bates' Fee 1, 3-18-1w, no report since sp.

WASHINGTON COUNTY—Hobson et al's Wilson 1, 27-7-1w, sd wo 650 ft; Hobson Bros.' 1, 9-8-2, sd 1450 ft. Oscar Brown's U. S. Land & Cotton 1, 26-3-2, no report.

TENNESSEE

DECATUR COUNTY—Chester County O. & G. Co.'s Montgomery 1, set 6-inch cas 1045 ft, dr 1331 ft. Standard Oil Co. of La.'s Wyatt 1, ta 1298 ft. (corrected).

SOUTHERN CALIFORNIA

RICHFIELD—		
Superior Oil Co.'s Schroder 1	*	4520

BELLFLOWER — Clearwater Pet. Co.'s Candler 1, dr shale 380 ft.

CALABASAS—J. W. Martin's 1, dr hard gray sand, 550 ft.

CHATSWORTH—Russel Pet. Co.'s Joughin 2, sr 2328 ft.

COMPTON—California Well Drilling Co.'s Del Amo 1, dr 8500 ft.

EL MONTE — Morgan West's Sing 1, dr shale 1218 ft.

FULLERTON—Shell's Bastanchury 1, re-dr 2650 ft. Standard's Bastanchury 1, rig.

NEWHALL—P. B. Anderson's 1, 10-inch cas re-cmt 510 ft, td 655 ft. Southern Calif. Drilling Co.'s Needham 2, rig. York & Lockhart's Clampitt 1, lcn.

NEWPORT—Mesa Pet. Corp.'s B. G. 1, trying to locate water, td 4910 ft. Oilwell Engineering Co.'s Interstate 2, fsh for packer 2800 ft; Francisco 1, lcn.

PIRU—Coastline Oil Co.'s Mazie 1, dr gray sand 1584 ft. Consolidated Oil Co.'s Queen 1, dr shale 200 ft.

POINT DUME — Marblehead Land Co.'s Rindge 3, dr shale 1414 ft.

PUENTE—R. C. Rucker's Grazide 1, dr shale 2430 ft. The State Co.'s Richfield 1, dr shale 1848 ft.

RICHFIELD — Southwestern Oil Co.'s Day 1, testing at 3800 ft. Superior's Bennett 1, dr sand 2233 ft; Davis 1, 6-4-9, new lcn.

SEAL BEACH—Continental's Bryant 1, dr shale 2000 ft. Shell's Alamitos 1, dr 300 ft.

LOS ANGELES — Burlingham Pet. Corp.'s Hardy 1, 9-inch cas cmt 2190 ft. George Hanners' Stallman 1, dr shale 2540 ft.

TELEGRAPH CANYON — Union's Rimpau 1, dr shale 1680 ft.

EAST TORRANCE—Archer Oil Co.'s Watson 1, dr shale 3650 ft.

VENICE—Ohio Oil Co.'s Gun Club 1, dr shale 6080 ft.

RIVERSIDE COUNTY — Spindletop Oil Synd.'s Salton 1, will resume operations, td 3460 ft. Trabuca Oil Co.'s 1, dr lime 4012 ft.

SAN BERNARDINO COUNTY — China-American Oil Co.'s 1, 17-4-4, new lcn. N. I. Duncan's 1, 8-4-6, new lcn. Malhala Oil and Gas Co.'s 1, co 4000 ft. Keck and Hall's Belyea 1, 32-2-8, rigging up rotary. Urmi Oil Co.'s Schuh-Zellers 1, dr 705 ft.

SAN DIEGO COUNTY—MacGregor Corp.'s Burler 1-A, dr shale 875 ft. S. S. Turner's Baler 1, dr shale 2116 ft.

KANSAS

STEVENS COUNTY—Trees Oil Co.'s Candy 1, sw ne sw, 3-35-38w, dr 2330 ft.

SUMNER COUNTY — Davidson et al's Strickland 1, sw se, 12-35-1w, rig.

STEVENS COUNTY—White & Chenney's Unknown 1, nec 11-34-42w, rog. W. Sidwell et al's Kelly 1, sw ne 16-34-38w, sd 1600 ft.

BARBER COUNTY — Skelly's Temple Ranch 1, sw ne, 13-34-15w, dr 4410 ft.

HARPER COUNTY—Slick's Miller 1, sec 13-34-8w, dr 5189 ft.

SUMNER COUNTY—Mid-Continent's Clark 1, sec 31-34-3w, Wilcox 4865-70 ft, hfw, dry and abn. Morgan & Carey's Hawkins 1, sw se, 9-34-1e, ur 8-in cas 2800 ft.

STEVENS COUNTY—McKenna et al's Unknown 1, c nw nw 29-33-36w, sd and sp.

SUMNER COUNTY—Shell's Armstrong 1, nec 12-33-1e, dr 3065 ft.

BARBER COUNTY—Robertson et al's Powell 1, c se se 11-32-10w, sd 3260 ft.

HARPER COUNTY—Slick's Thompson 1, nwc 10-32-6w, sd 4978 ft, Wilcox 4975 ft, hfw.

COWLEY COUNTY—Shawver et al's Oldham 1, nw se, 23-32-3e, dr 2375 ft.

HARPER COUNTY—Beeler et al's Bear 1, c nw 21-31-6w, sp and sd.

SUMNER COUNTY—Kingwood's Stayton 1, c ne 18-31-2w, dr 1732 ft. Slick, Pryor & Lockhart's Peasel 1, nwc 33-31-1w, hfw 2675-2710 ft.

COWLEY COUNTY—Milton & Mead Bros.' Tatum 1, se sw 11-31-6e, sd 1325 ft. Roth & Farrount's Thompson 1, ne se 31-31-6e, dr 500 ft.

BARBER COUNTY — Allison & Fitzwilliams' Kimberg 1, nw se 2-30-12w, lcn.

SUMNER COUNTY—Hatfield et al's Dauber 1, nec 18-30-1w, ru. Lario et al's Osborne 1, ne se 20-30-1w, ur 8-in cas 2670 ft.

COWLEY COUNTY — A. M. Landon's Wheeler 1, c sw nw se 24-30-4e, dr 1125 ft. Prairie & Leighty's Ball 1, sw se 4-30-5e, ru.

PRATT COUNTY — Jones & O'Haver's Lunt 1, csw nw 15-28-14w, sd 4550 ft.

KINGMAN COUNTY—D. P. Fleeger's Ashbraft 1, 16-28-7w,dr 3025 ft.

SEDGWICK COUNTY—Marland & Amerada's Sensroth 1, nw c 25-28-4w, sd 3700 ft. Wilson et al's Ottaway 1, sw nw 16-28-2w, rig. Kellar & Lewis' Buckles 1, nw se 3-28-1w, dr 150 ft.

SEDGWICK COUNTY—Moore et al's Stewart 1, c ne se nw 18-28-1w, dr 1955 ft. La Font et al's Carlton Bros. 1, c se se nw, 24-28-1e, sd 1685 ft.

BUTLER COUNTY—Stroub-Dutton et al's Kebby 1, se sw sw 12-28-3e, dr 350 ft.

FORD COUNTY—McNabb et al's Unknown 1, c se 26-27-22w, rig.

KINGMAN COUNTY—White Eagle et al's Lorenz 1, c ne sw se 25-27-5w, dr 3315 ft.

BUTLER COUNTY—Martin et al's Flanigan 1, c sw se sw 29-27-3e, spd and sd.

GREENWOOD COUNTY — F. Konkay et al's Rock 1, ne nw ne 7-27-12e, spd and sd.

PRATT COUNTY—Skelly's Johnson 1, ne sw 21-26-17w, rur. Wilcox's Unknown 1, sw nw 7-26-15w, dr 700 ft. O'Haver & Jones' Careke 1, c ne sw 7-26-14w, dr 1220 ft.

RENO COUNTY—Wilson et al's McPheeters 1, c s½ nw 22-26-8w, td 2195 ft, ur 10-in cas. Austin Drlg. Co.'s Strickey 1, swc nw 12-26-5w, hfw 3998-4018 ft, sd.

SEDGWICK COUNTY—Washabaugh's Harrison 1, c nw ne ne 3-26-2w, dr 3923 ft, Wilcox 3910 ft, hfw. Travendar et al's McLean 1, se sw se 23-26-1w, rig. Boyle et al's Sandusky 1, c nw ne se 34-26-1w, hfw 3450-3510 ft, D. & A. Burnett's Davidson 1, c nw nw sw 27-26-1e, td 3358 ft, rvg 5-in cas. Wentz's Allston 1, ne nw 24-26-2e, dr 2720 ft. Sinclair's Johnson 1, nec 16-26-3e, td 2985 ft, ur 6-in cas.

BUTLER COUNTY—Lario's Miller 1, ne se ne 36-26-3e, spd.

HODGEMAN COUNTY — Swain et al's Kenthorne 1, c nw 21-25-24w, sd 390 ft.

EDWARDS COUNTY — Dixie-Amerada's McCarty 1, sw 22-25-17w, rig. Barnsdall's McCarty 1, nw ne 31-25-17w, rog.

SEDGWICK COUNTY—Empire's Blitz 1, ne nw 36-25-4w, dr 2910 ft. Deering-Marshall's Dick 1, c sw 4-23-2w, hfw 3998-4010 ft, sd.

BUTLER COUNTY — White Eagle's Bacholder 1, sw c, 17-25-3e, Wilcox 3220-94 ft, hfw, D. & A. Millmack et al's Clearwater 1, swc 33-25-3e, Wilcox 3164-3200 ft, hfw, D. & A.

RENO COUNTY—Skelly's Birkett 1, ne sw 30-24-7w, top chat 3795 ft, dr 3820 ft, hfw.

HARVEY COUNTY — Independent & Reserve's Moulds 1, c ne 7-24-1w, dr 2995 ft. Jolly & Ogg's Randall 1, nec 11-24-1w, sd 3440 ft. E. W. Marland's Neiman 1, c ne se ne 8-24-3e, dr 1150 ft. Walton's Weiman 1, c se sw 13-24-2e, chat 2828-30 ft, show oil rvg 6-in cas 2830 ft.

STAFFORD COUNTY — Gibson et al's Mueller 1, c sw 11-23-14w, dr 500 ft.

HARVEY COUNTY—Liggett's Regier 1, c se nw se 2-23-2w, td 2656 ft, ur 8-in cas. McCullough's Prouty 1, nw sw 3-23-1w, dr by tools, td 2480 ft. Jolly & Ogg's Hupp 1, se ne 22-23-1w, sd 3220 ft. Margaret Gay Oil Co.'s Grouse 1, nw ne nw 29-23-1w, sd 3295 ft.

BUTLER COUNTY—Valley Osage's Sirs 1, sec 34-23-3e, dr 2580 ft.

COFFEY COUNTY — Shaffer & Howell's Levering 1, csl se 12-23-14e, sd 450 ft.

HODGEMAN COUNTY — Phillip's Housman 1, c nw ne 30-22-22w, hfw 4082-84 ft, td 4091 ft, ur 6-in cas.

RENO COUNTY—Witt et al's Olsen 1, se nw 14-22-6w, td 1465 ft, rvg 15-in cas.

HARVEY COUNTY—Superior's Regier 1, se nw 11-22-3w, rig.

GREENWOOD COUNTY—T. K. Simmons' Steele 1, se ne 32-12-12e, dr 1425 ft.

PAWNEE COUNTY—F. C. Troupe's Lovett 1, cel ne ne 31-21-16w, sd 1560 ft.

STAFFORD COUNTY—Phillips' Houghton 1, swc 20-21-12w, sd and spd.

RENO COUNTY—Burghers' Fair 1, c se ne ne 14-21-10w, sd 300 ft. Boucher et al's Boy 1, swc 16-21-10w, spd.

McPHERSON COUNTY—Howard & Travers' (now McCulloch's) Cornelius 1, swc 7-21-4w, dr 2270 ft. Harry Skelly et al's Neufeldt 1, se ne 19-21-3w, lcn. McPherson's Fisk 1, sw ne ne 15-21-2w, sd 2450 ft. Helmerick & Payne's Klassin 1, se ne ne 14-21-1w, dr 3445 ft, lime.

RUSH COUNTY—Prairie's Black 1, sw ne ne 11-20-18w, ru.

RICE COUNTY—Miller & Detrick's Shumway 1, c sw 2-20-9w, show oil, hfw 2925-85 ft, td 3100 ft, ur 8-in cas. McCulloch's Williams 1, c ne 35-20-8w, ru and sd. Derby's Johnson 1, c nw ne se 24-20-6w, td 2240 ft, skidding rig.

McPHERSON COUNTY—Milmack's Decker 1, nwc 11-20-3w, fshg 1500 ft. Reynolds' Koehn

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1, ne se ne 15-20-2w, dr 1085 ft. Lario's Diener 1, se sw 10-20-1w, hfw 3095 ft, 5-in cas, 3260 ft, sd.

MARION COUNTY—Empire's Reising 1, ne nw nw 34-20-2e, Wilcox 3035-75 ft, hfw, td 3161 ft, D. & A.

LYON COUNTY—Harry Mortlock et al's Diebolt 1, nw ne 24-20-11e, dr 1000 ft.

RUSH COUNTY—Danciger O. & R. Co.'s Pinonka 1, c ne sw ne 17-19-17w, 6-in cas 3905 ft, td 4044 ft. Danciger's Bell 1, c sw 16-19-8w, spd and sd.

RICE COUNTY—Milmack's Cain 1, se 29-19-7w, td 3045 ft, ur 8-in cas.

McPHERSON COUNTY—Transcontinental's Algers 1, ne sw 1-19-5w, sd 3467 ft. Perry et al's Wade 1, c se 20-19-4w, sd 3430 ft.

MARION COUNTY—Marshall's Higgins 1, nec 33-19-5e, rig.

LANE COUNTY—Robinson et al's Dickerson 1, swc nw se 11-18-27w, set 8-in cas 2625 ft.

NESS COUNTY—E. W. Marland's Moses 1, ne se 7-18-25w, td 4300 ft.

RUSH COUNTY—Millmack's Mohr 1, c nw 11-18-16w, spd and sd.

McPHERSON COUNTY — McPherson Oil Dev. Co.'s Sorenson 1, c se 23-18-2w, dr 2600 ft.

BARTON COUNTY—Slick et al's Sweeney 1, sw ne 23-17-11w, dr 500 ft.

ELLSWORTH COUNTY — Tatlock et al's Sacken 1, c sw se 25-17-9w, sd 675 ft.

RICE COUNTY—Texas' Sherman 1, ne sw 16-17-6w, dr 3550 ft.

McPHERSON COUNTY—Dixie's Johnson 1, swc 20-17-3w, lcn.

MARION COUNTY—White Eagle et al's Ucker 1, ne nw 24-17-2e, dr 1830 ft. American O. & R. Co.'s Urie 1, sw nw 10-17-3e, td 2994 ft, ur 6-in cas.

LANE COUNTY — Blankenship Pet. Co.'s Shaffer 1, nec ne 24-16-28w, spd and sd.

BARTON COUNTY—Allison & Fitzwilliams' Brodie 1, nec 19-16-12w, dr 1950 ft. Prairie's Davidson 1, nw se 4-16-11w, lcn.

SALINE COUNTY—Dixie's Thorstenberg 1, nw ne 10-16-3w, show oil 3308 ft.

DICKINSON COUNTY—Hiatt & Durham's Went 1, nwc 17-16-2e, spd.

CHASE COUNTY—Arrow O. & G. Kinkle 1-A, c nw ne 8-18-7e, spd.

TREGO COUNTY—Prairie's Kutina 1, c ne sw ne 29-15-21w, dr 3185 ft.

ELLIS COUNTY—Rush Oil Co.'s Gatewood 1, nw 4-15-20w, fsg 2555 ft.

ELLSWORTH COUNTY — Templemen's Lanbangagen 1, c sw 20-15-5w, dr 2975 ft.

SALINE COUNTY—Austin's Olsen 1, c nw sw se, 10-15-4w, 6-in cas 3070 ft.

TREGO COUNTY — Dixie and Amerada's Rietmeyers 1, c ne ne 19-14-21w, dr 825 ft. P. & R.'s Kingsley 1, c se nw nw 24-14-21w, ur 15-in cas, td 960 ft.

RUSSELL COUNTY — Midwest Exploration's Benso 1, swc 4-14-15w, td 2635 ft, ur 10-in cas.

ELLIS COUNTY — Streeter & Stearns' Laiker 1, sw ne 26-13-20w, sd 1200 ft.

RUSSELL COUNTY—Cress & Back's Unknown 1, cw½ ne nw 20-13-4w, rog.

SALINE COUNTY—Twin Moulds' Hughes 1, cw½ ne nw 20-13-4w, sd 700 ft.

DICKINSON COUNTY — Krueger et al's Diche 1, c nw ne ne 17-13-4e, dr 1500 ft.

WALLACE COUNTY—Menton & Entyre's Parker 1, c se nw sw 8-12-41w, rig, abn.

TREGO COUNTY—Philips' Spitz 1, sec 24-12-25w, dr 3000 ft. Mid-Kansas' Ridgeway 1, ne sw 28-12-21w, dr 3941 ft. Day's Guyler 1, c sw ne ne 36-12-21w, spd and sd.

SHAWNEE COUNTY — Jenkins & Scott's Haden 1, ne se 8-12-14e, sd 750 ft. Jenkins & Scott's Haden 1, se nw 10-12-17e, dr 500 ft.

TREGO COUNTY—Day's Unknown 1, c ne nw nw 2-11-21w, dr 3040 ft.

ELLIS COUNTY—Byren et al's Fisher 1, nw se 4-11-20w, sd 1000 ft.

OTTAWA COUNTY—Derby's Neimueller 1, c nw se 9-10-3e, dr 2400 ft.

SHAWNEE COUNTY—Jenkins Scott's Unknown 1, nw ne 28-10-15e, rig.

JEFFERSON COUNTY—Wichita Oil Co.'s Simpson 1, nw sw sw 19-10-17e, ur and sd.

ROCKS COUNTY — Central Commercial's Toxa 1, ne sw se 22-9-17w, td 2470 ft, ur 6-in cas. Krueger et al's Steis 1, c nw sc sw 12-9-16w, spd and sd.

GRAHAM COUNTY—Gulf Coast's Johnson

1, swc sw se 27-8-25w, dr 4232 ft. Naylor et al's St. Johns 1-C, se 27-8-25w, rign. up.

CLAY COUNTY—Chrisler's Tivler 1, swc 19-8-2e, rog. Arkansas Fuel's Martin 1, se ne sw 24-8-4e, dr 1200 ft.

SHERMAN COUNTY—A. D. Hansen et al's Murray 1, ne se nw 22-7-40w, sd 3035 ft.

GRAHAM COUNTY — Madolin's Unknown 1, c se sw sw, 27-7-26w, spd and sd.

OSBORNE COUNTY — Phillips' Grieve 1, nw se ne 6-7-12w, td 3472 ft, fshg.

RILEY COUNTY — Derby-Skow Bros.' Lundstrum 1, ne 32-7-5e, sd 2270 ft.

OSBORNE COUNTY — Mid-Kansas' Boyce 1, se nw 8-6-13w, dr 3750 ft, top lime 3730 ft.

RILEY COUNTY—Gray et al's Smith 1, ne se 30-6-6e, sd 1970 ft.

SMITH COUNTY—Phillips' Clydevale 1, se nw 23-6-14w, dr 3170 ft.

NORTON COUNTY—A. L. Richard's Colby 1, c sw 17-4-21w, rog.

WASHINGTON COUNTY—McCool & Vicent's Linn 1, nw ne, 27-4-3e, dr 2750 ft.

NORTHERN CALIFORNIA

KERN COUNTY

BAKERSFIELD—Western Gulf's KCL-A2, 6-30-28, fsh for bailer 4500 ft; KCL-A3, 6-30-28, sd 4444 ft.

BELRIDGE—J. H. Kennedy's Belridge 1, 5-29-21, dr shale 615 ft. Keystone Pet. Corp.'s 1, 18-28-22, dr shale and clay 550 ft. Ozena Oil Co.'s Kendon 2, 27-29-21, dr shale 2404 ft. K. C. Wallace's 1, 32-29-21, dr shale 2355 ft.

BUENA VISTA LAKE — Ohio Oil Co.'s Pyramid 1, 20-32-25, will ban, td 6675 ft.

BUTTONWILLOW — Milham Exploration Co.'s Kern 6, 8-28-23, re-dr 4852 ft.

EDISON—Elmer Oil Co.'s 1, 15-30-30, dr shale 3655 ft. Texas' Newman 1, 23-29-29, dr shale 2515 ft.

ELK HILLS—Standard's KCL-27, 31-30-25, dr shale 7809 ft.

GOULD HILLS—Bomke and Ball's Larsen 1, 12-29-20, co 2385 ft. Casa Mira Oil Co.'s Theta 1, 20-28-20, dr shale 1775 ft.

JASMINE—Max McVey's 1, 23-25-27, lcn.

LERDO—Shell's An-1, 5-29-27, dr gray sand 5722 ft.

McKITTRICK—Ohio's M. M. 1, 32-20-22, rigging up rotary. H. L. Whiston's Wisecarver 1, 30-30-22, dr shale 313 ft.

MIDWAY—Shell's Perris 1-A, 15-32-23, dr shale 7077 ft. Standard's Mascot 1, 26-32-23, dr shale 7377 ft. Texas' Gore 4, 21-31-22, dr hard sand 1707ft.

POSO CREEK—Agey Pet. Co.'s Agey 1, 28-27-27, dr shale 1717 ft. F. M. Sayre's 1, 8-26-28, will abn, td 1430 ft.

ROSEDALE—General Pet. Corp.'s KCL-1, 13-29-26, dr shale 4105 ft.

ROUND MOUNTAIN—Sunnyside Oil Co.'s Smith 1, 17-28-29, sd 1520 ft.

SAN EMIDIO—Willard Mallery's Harvey 1, 9-10-23, 16-in cas cmt 120 ft, td 180 ft. Union's KCL-2, 5-10-21, sr 3675 ft.

SUNSET—Union's Fried 1, 8-11-23, dr shale 2655 ft.

TEMBLOR HILLS—Shell's Gonyer 1, 32-32-23, lcn. Union's Williams 1, 22-32-23, bailing 2890 ft, will test.

SANTA BARBARA COUNTY

ARLIGHT — Standard's Sudden 1, 35-6-26, will make production test at 2013 ft.

ARROYA CANYON—Shell's Fithian 1, 18-4-25, dr sand and shale 276 ft.

BUELL CANYON — Union's Buell 1, dr shell 2115 ft.

CARPENTERIA—Continental's 1, will re-dr td 4535 ft.

CASMALIA — Wildcat Oil & Dev. Co.'s Donovan 1, 20-10-35, dr shale 3409 ft.

GIBRALTAR DAM—Gilmore Oil Co.'s Gibraltar 1, 1-5-28, rig. Pacific Western Oil Co.'s Gibraltar 1, 14-5-27, dr hard sand 1255 ft.

GOLETA — F. G. Anderson's Langman 1, 10-4-28, 8⅝-in cas re-cmt 4672 ft. Carrey and Adams' M-1, 1-4-28, cmt 11-in cas 1500 ft, td 1790 ft. General Petroleum's More 2, dr shale 2222 ft. Omar McGee's Pomatto 1, 12-4-29, rig. Petroleum Securities' Bishop 1, dr shale 5260 ft. Standard's Edwards 2, rigging rotary. L. B. Tannehill's Storke 1, dr gray sand 3100 ft.

LOMPOC—Gaviota Oil Co.'s Marretti 1, 9-7-35, dr shale and sand 2678 ft.

MONTECITO—W. D. Inskepp's Meyer 1, nw lcn.

ORELLA—Oakburn Oil Co.'s Permit 170-A, lcn.

POINT CONCEPCION—Standard's Gerber

MUDWATE
HEAVY DRILLING MUD
REG. U.S. PAT. OFFICE
7

"Points of Superiority"

POINT 1
WEIGHT
Specific Gravity approximately 400% greater than average slush.

POINT 2
GAS CONTROL
Invaluable where high pressures are encountered. Enables the operator to keep a well under control while drilling.

POINT 3
LUBRICANT
Makes a very smooth mixture which lubricates the drill stem. More hole with less strain on equipment.

POINT 4
ANTI-CORROSIVE
Acid resisting to a marked degree. A valuable anti-corrosive.

POINT 5
PREVENTS CAVING
Weight and texture tends to prevent caving in shale and similar structures.

POINT 6
STUCK CASING
Readily mixed with and suspended in oil for use in pulling stuck casing.

POINT 7
SIMPLE TO MIX
May be added to mud in slush pit in any desired quantity. As simple as mixing ordinary mud.

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APPRAISALS
REPORTS-COMMERCIAL & TAX

SURVEYS
ESTIMATES OF OIL RESERVES

AN EXPERIENCED OIL FIELD ORGANIZATION

1, 11¾-in cas cmt 2615 ft. Western Gulf's Hollister 2, testing oil sand, td 3200 ft.

SAN MARCOS—California Oil Properties' Fortine 1, 3-4-28, dr shale 2655 ft.

SANTA BARBARA—Standard's S. B. Co. 1, rigging up rotary.

SANTA MARIA — O. C. Field Gasoline Co.'s Bradley 1, deepening from 4295 ft. Shell's Careaga 1, rig.

VENTURA COUNTY

CASITAS—Miley Oil Co.'s No. 2-A, dr hard sand, 1882 ft.

CONEJO—Triunfo Oil Co.'s 1, 24-1-19, dr 1425 ft.

LOCKWOOD—Lockwood Valley Oil Co.'s 1, 28-8-21, dr shale 578 ft.

OJAI — California-Ventura Oil Co.'s La Cresse 1, running 4-in drill pipe, td 5095 ft. Continental's Sulphur Mountain 3, dr shell 5089 ft. Gilmore Oil Co.'s Pirie 1, dr shale 574 ft.

PIRU—Bolsa Chica Oil Corp.'s Show 1-A, dr shale 1150 ft.

RINCON—Associated's Snowball 1, 19-4-24, grading for rig.

SANTA PAULA—Empire Oil Co.'s Steen 4, 13-4-21, 8¼-in cas cmt 2192 ft. Wardman and Jones' Anlauf 1-A, sdtr iron 1300 ft.

SATICOY—Standard's Citrus 5, 10-2-22, re-dr 8166 ft.

MISCELLANEOUS

FRESNO COUNTY—Petroleum Securities' Ladd, 1, 28-20-16, dr gray sand 6717 ft. John Knudsen's No. 2, 28-21-14, dr shale 444 ft. Rio Grande's M-1, dr shale 2450 ft.

KINGS COUNTY—H. B. Porter's 1, 9-24-17, dr shale 2240 ft. J. E. O'Donnell's 1, 7-23-20, 11¾-in cas cmt 1730 ft, td 1880 ft.

MADERA COUNTY—George F. Getty's Gill 1, 18-13-16, clay and shale 150 ft.

MENDOCINO COUNTY—Twin State Oil Co.'s Soldani 1, 14-12-17, dr hard sand 1040 ft.

MONTEREY COUNTY—Standard's Piedmont 1, 23-22-7, dr shale 2185 ft. Union's Paige 1, 8-22-8, dr shale 2515 ft. Shell's Dudley 1, 15-22-9, dr hard sand 4666 ft.

SAN JOAQUIN COUNTY—Elmer Oil Co.'s Round Timbers 1, 6-3-9, lcn. Barnhart Oil Trust's Gilbert 1, 3-2-10, dr shale 1616 ft.

SAN LUIS OBISPO COUNTY—Panorama Oil Co.'s Vishu 1, 7-31-21, ripping cas 4015 ft. Paso Robles Synd.'s Emerick 1, 34-27-25, made gas when swabbed, td 3735 ft. Latin-American Oil Co.'s Upton 1, 31-27-15, plugged to 3000 ft. Midwest Oil Co.'s Hately 1, 34-31-15, pulling 10¾-in cas, td 2210 ft. Pismo Dome Oil Co.'s Prcco C-1, 5-31-13, dr shale 778 ft. Texas Pacific Coal & Oil Co.'s 1, 25-32-14, dr shale 3480 ft. Union's Chandler 1, 12-32-14, dr 4685 ft; Russ 1, 34-32-15, dr shale 4033 ft.

TULARE COUNTY—Terra Bella Oil Co.'s Gardiner 1, 35-22-27, lcn. Roy White's 1, 8-23-26, dr shale 2305 ft. Terminal Oil Co.'s Brittain 1, 29-20-25, dr shale 2818 ft.

COLORADO

ADAMS—N. M. Slatt, 27-35-64w, carry 12½-inch at 800 ft.

BENT—Continental, Pipe Springs 1, se 27-29-49, dr 5200 ft.

DELTA—Crawford O&G Co., ne 28-15n-1w, stand 350 ft.

DOLORES—Transcontinental, Glade 1, nw 30-41-16, dr 4568 ft.

ELBERT—Belmont Oil Co., Maher 1, sw 4-6s-59w, carry 6⅝-inch at 3690 ft.

JACKSON—Midwest, Rich 21X, nw 9-6-8, mudded 3200 ft. P & R, Fuller 1, 2-6-81, dr 3100 ft.

JEFFERSON—Ruby Hill O&G Co., Braden 1, se 14-4s-69w, dr 3569 ft.

LAS ANIMAS—Trinidad Dev. Co., Flontz 1, sw 23-32-63, dr 2360 ft. Perker Club-Kinney Coastal, Fee 1, 14-4s-58, dr 3782 ft.

LARIMER—Standard of Colo., Hertha 1, 21-4n-69, dr 620 ft.

LA PLATA—Royal P & R, Red Mesa 1, 27-33-12, sd. Detroit Oil Assn., Olbert 1, sw 9-35-12, tools lost.

LINCOLN—Kelly Oil Co., State 1, ne 36-14-57, stand 2950 ft.

MESA—Argo Oil Co., Hoel 1, 23-8s-104w, fsh 8¼-inch, td 2700 ft.

MOFFAT—McLaughlin et al, Wms 1, 2-3-91, dr 4251 ft. McCormick et al, Sales 1, se 28-4n-92, hole trouble at 3160 ft. Vermillion O&G Synd., 1, se 23-9n-100w, dr 642 ft. Mtn. Fuel Supply Co., Burton Musser 1, 5-11-97, rig. Mtn. Fuel Supply Co., L. B. Lasher 1, 25-12-101, cellar. Texas Prod. Co., Berlin 1, ne 19-12n-100w, muddy off gas, prep to cem 8⅝-inch at 2055 ft.

MONTEZUMA—Hallet et al, 1, sw 14-36-14, sd 50 ft.

PUEBLO—Beulah Dome Oil Co., Hideland 1, 7-13-67w, dr 900 ft.

RIO BLANCO—White Eagle, Fordham 1A, sw 9-2-26, dr 2815 ft. Texas Prod. Co., Potter 1, sw 30-2n-96w, dr 5271 ft.

YUMA—Major Pete, Black Wolf 1A, sw 7-2-43, stand 1535 ft. Phillips, Andrews 1, nw 3-2-42, dr 4300 ft.

WASHINGTON — Donohoe et al, Middlemist 1, se 14-4s-56w, dr 1300 ft.

WELD—Platte Valley Pete Corp., Patterson 1, sw 23-8n-61w, carry 4¾-inch at 4580 ft.

NEW MEXICO

CHAVES—Warman Oil Trust 1, sw 27-13-24, dr 310 ft. Cactus Prod. Co., Sullivan 1, 14-10s-28e, dr 1645 ft.

DE BACA—Matador Oil Co., State 1, sw 20-28-10w, strmmg 2685 ft. Pittsburg Oil Co., 1, ne 16-1s-27e, sd 4506 ft. Transcontinental McWhorter 1, 6-35-23, dr 4770 ft.

GUADALUPE—Los Angeles, Hollywood Oil Synd., McMullen 1, se 24-5n-16e, skid rig and spud.

LEA—Gypsy Oil Co., Mattern 1, 24-21-36, plug back from 4150 ft. Texas, Moberly 1, se 17-26-37, sd 3542 ft. Texas, State 1, 2-21-33, dr 615 ft. Empire Gas & Fuel Co., Closson 1, se 6-22-36, try case off gas 3650 ft. Empire Gas & Fuel Co., State 3B, se 5-21s-35e, dr 3700 ft. Ohio Oil Co., State 1, 9-13-38, testing 4207 ft, poor showing, will deepen. Buell & Hagen, State 1, ne 13-11s-35e, dr 4135 ft. Conoco, State 1, 1-21-33, dr 820 ft. Conoco, Myers 1, sw 17-21-36e, dr 3635 ft. Conoco, Meyer 1, nw 28-22s-36e, dr 3600 ft. Shell Pete Corp., Terry 1, ne 22-19-38, dr 3850 ft. Shell Pete Corp., Thorpe 1, 10-19s-38e, dr 1300 ft. Walker et al, Terry 2, se 10-19s-38e, ready to spud. Humble O. & R. Co., Lindley 24, sw 13-25-36, dr 640 ft. Tector Oil Co., King 1, sw 27-25-32e, dr 3789 ft. Texas Pacific C. & O. Co., State 2, sw 21-22-36, on prod. 3720 ft. Magnolia Pete Co., Lindley 1, ne 26-25-36, dr up pipe. Maljamar O&G Co., Baish 2, ne 21-17-3e, dr 4118 ft, showing much oil. Penn Oil Co., State 1, ne 21-19s-36e, rigging at 3400 ft. Bordages et al, Hughes 1, 27-19s-38e, water trouble 4012 ft. Morton et al, State 1, nw 32-11s-38e, dr 2167 ft. Barnsdall Corp., 1, 8-17s-38e, dr 828 ft. Cranfill & Reynolds, State 2B, 2-21-33, dr 1315 ft. Cranfill & Reynolds, Cushman 1, 23-24-36, co 1261 ft. Midwest, State 24, sw 10-19s-38e, rigging cable tools at 1668 ft. Cranfill & Reynolds, State 3B, 2-21s-33e, dr 600 ft. Midwest, Terry 13, sw 10-19s-38e, dr 1484 ft. Amerada Pete Corp., State 1, nw 1-21-33, dr 920 ft. Snowden & McSweeney, State 1, sw 1-21-33, dr 645 ft.

McKINLEY—J. W. Halsell, Santa Fe 1, 17-19-9, dr 2650 ft. San Juan C. & O. Co., 1, se 27-18n-9w, sd 2205 ft. Wms et al, A. T. S. F. 1, se 19-18n-8w, dr 1810 ft.

RIO ARRIBA—Berringer et al, Hartman 1, ne 8-29-7, sd 825 ft.

SAN JUAN—Dorothy Oil Co., 29-30-9, dr 1400 ft. Kutz Canon O&G Co., Day 1, 20-22-10, dr 1055 ft. Blackrock Oil Co., 1, sw 11-25-13, wait for extension of time, td 1550 ft. Angel Peak Oil Co., Kutz Canon 1, 11-28n-11w, bailer lost. Greathouse et al, Roderick 1, sw 11-22-14, dr 980 ft. Childers Drlg. & Pr. Co., Westwater 2, nw 34-31-18, sd. Reserve Oil Co., Shaffer 2, ne 1-21-14, showing some oil at 715 ft.

SAN MIGUEL—Pioneer O&G Co., Thunderbird 1, nw 14-15-16, dr 2182 ft. Starr Oil Co., Adams 1, ne 25-17-16, dr 3100 ft. Cibola Pete Co., Gov't 1, nw19-13n-14e, dr 420 ft. Hershfield Dev. Co., Cabra Springs 1, ne 21-12n-22e, dr 810 ft. Benedict et al, Wilson 2, nw 25-17n-16e, dr 90 ft.

SOCORRO—Lockhart & Co., 14-3s-6e, dr 1200 ft.

TORRANCE—Williams et al, Staplin 1, ne 16-8n-10w, dr 1212 ft.

VALENCIA—Rio Puerco Oil Co., N. M.-Ariz. Land Co., 2, nw 13-6-2, wait pipe 3145 ft. Acme Oil Co., N. M.-Ariz Land Co., 1, 26-6-3, dr 4200 ft. Harlan et al, Harlan 1, 5-6n-2e, dr 1235 ft.

WYOMING

BIG HORN—P & R, 3, 24-56-98, dr up bailer, 4222 ft.

CARBON—C. E. Bivens et al., 32-12-92, dr 2300 ft.

FREMONT—Kinney-Coastal, 22-3-1, shut in gasser. Texas Production Co., State 1, 36-34-95, rig.

HOT SPRINGS—Midwest, 8, 6-44-98, pull 12½-inch, cleaning out and underreaming at 1540 ft. Ohio, Smith 1, 9-46-99, dr 1170 ft.

LINCOLN—Midwest, Grey's River 1, 25-37-117, casing trouble, td 1700 ft.

PARK—P & R, Pitchfork 1, 14-48-102, sd 2074 ft. Ohio, Burlington 1, 21-53-101, dr 2824 ft. Resolute Oil Co., 17-27-101, dr 3975 ft.

SWEETWATER — Mtn. Fuel Supply Co., Tucker 1, 18-13-99, dr 3130 ft. Mtn. Fuel Supply, Cappers 1, 2-19-104, cemented on top of Frontier, 3M showing. Mtn. Fuel Supply, U. P. 1, 13-19-104, sd. Mtn. Fuel Supply, Humphreys 2, 10-12-101, rigging up.

UINTA—California Co., U. P. 1, 7-17n-119w, dr 4412 ft.

SOUTHWEST TEXAS

BEXAR COUNTY—Crouch-Knight & Stewart's T. W. Masterson 2, dr; H. Crouch No. 1, dr. Mrs. Alice Garrett's James Scott Estate 1, lcn. Moore and Juar's Ellison 1, dr about 1800 ft. Leon Creek Oil Co.'s A. Reininger 1, dr below 1700 ft. Penn-Tex.'s Kate May 1, dr about 1550 ft. Swift and Fischer's Beck Yelvington tract 1, sd at 1002 ft. T. Masterson 3, lcn. Ekert's Doborski 1, dr; Lidemeyer 2, dr.

BEE COUNTY—Houston Oil Co.'s McKinney 1, dr. The Texas Co.'s Tipps 1, moving on.

BASTROP COUNTY—R. L. Botts et al's Alexander 1, dk. T. C. Hadley's Keil 1, dr. Howell et al's Weckham 1, standing at 1710 ft. Humble's Hendricks 1, sd at 1427 ft. Pacific Oil Co.'s Donnell 1, sd at 2629 ft. Superior Oil Co.'s King 1-A, dr.

BROOKS COUNTY—Amos, Dinn, Tr.'s Garcis-Ramos 3, dr 650 ft. G. W. French's Allen 8, dr 203 ft. Houston Oil Co.'s Holbein-Wrohser 1, dr 350 ft.

CALDWELL COUNTY — Alexander & Smith's G. W. New 1, dk moving on rotary. Harper et al's Tabor 2, prod 10 bbls at 1915 ft. Humble's C. Floy Gray 10, dr 2400 ft; A. Floy Gray 11, dr 2500 ft; C. Floy Gray 9, prod 35 bbls at 2681 ft; Johnson 7-A, prod 20 bbls at 2703 ft; B. Smith 8-B, prep to set csg about 2680 ft; A. Smith 4-A, prod 155 bbls at 2719 ft; C. F. Dye 9, prod 200 bbls at 2682 ft; Northcutt 4-B, dr 2400 ft; McIntyre's Thomas 1, sd 2650 ft. Nash et al's C. Davis 5, set csg at 2724 ft in Edwards at 2725 ft.

DE WITT COUNTY — McIntyre's Van Rooder 1, dr 2550 ft. F. P. Zock's Steinman 1, lcn.

DUVAL COUNTY—Allied Gas Co.'s Dinn 1, lcn; Dinn 7, lcn. R. N. Buckner's Peters 1, ru. Humble's Koehler 35, prod 25,000,000 cubic ft of gas at 1789 ft; Koehler 37, set surface csg at 297 ft prep to resume dr. Houston Oil Co.'s Cl Peters prod 25,000,000 cubic ft of gas at 1790 ft. Magnolia's Hahl 9, dr; King-Harper 2, lcn; Lindell 2, dr; Hahl 10, dr 1765 ft. J. G. Mackey's Dinn 2, dr 1700 ft. National Oil Co.'s Ball 2, dr 1150 ft. (Error in last week's report—reported dr 2730 ft—should have been 730 ft). Simpson-Fell Oil Co.'s Moody 7, ru. Southern Oil Co.'s Welder Woods 1, standing 750 ft. Reilly, Trapshooter and C. E. Long's (Shell) 3, ru. Trussell & Partee's Hagist 1, dr 2000 ft. F. H. Zoch's King 1, lcn (also listed in Jim Hogg).

FALLS COUNTY—O. W. Killam's C. A. Jones 1, dr.

FAYETTE COUNTY — Mouldon Oil Co.'s Kempe 1, dr about 1900 ft.

GOLIAD COUNTY — Compton and Co.'s A. T. Framme 1, prep to spud in. Houston Oil Co.'s McKinney 1, dr. Humble's Spangle 1, sd at 1037 ft. Mission Drlg Co.'s Ray 5, lcn; Ray 3, dr. Western Union Oil Co.'s Lucas 1, resume dr. Zoch et al's Kaufman 1, resume dr at 3010 ft.

GONZALES COUNTY — Adams & Lisle's 1 dr. Acme Oil & Royalty Co.'s H. R. Weber 1, dr 1400 ft. Beeman & Station's Station 1, dr. Bruner's Miller Bros. 1, prep to resume dr. Burt & Son's F. O. Menking 1, prep to spud in. Cranfill-Reynolds' Land 1, dr. Green et al's Dix 1, dr. Empire Oil and Gas's Norwood 1, dr. Linderman Bros.' Lottman 1, re-

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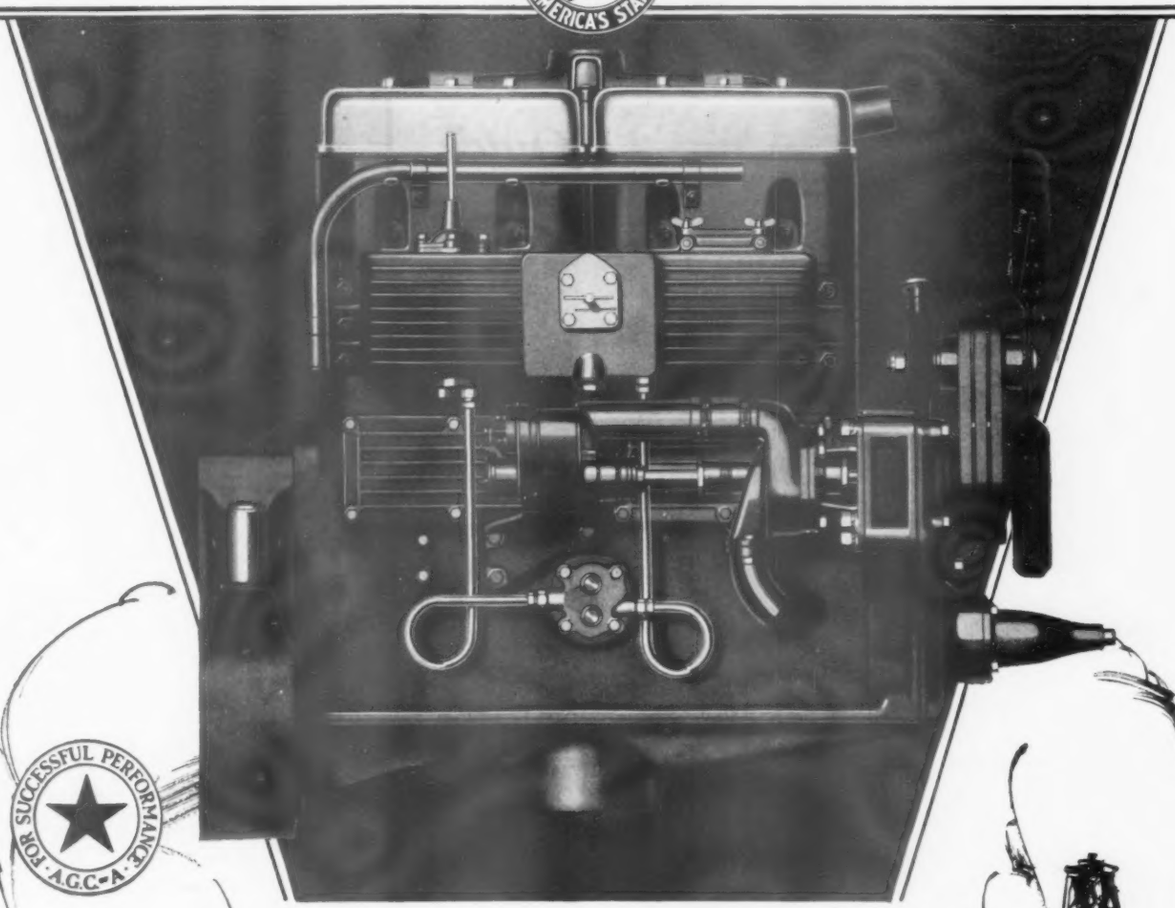

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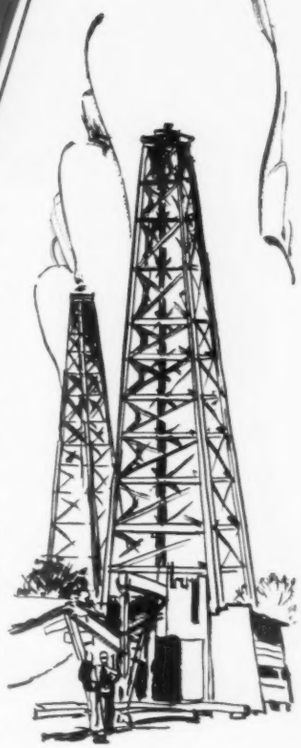

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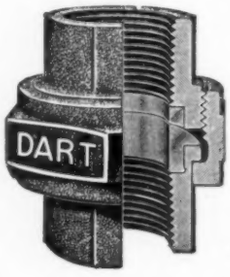

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sume dr. Ft. Bend Oil Co.'s Hamm 1, sd ar 3320 ft. Finnel and Elam's J. F. Robinson 1, resuming operation. United North & South Dev. Co.'s Preston 1, dr; Knippa 1, lcn.

GUADALUPE COUNTY—All States Pet. Co.'s (Carl Bros.) Powell 1, dr. Cranfill-Reynolds R. C. Appling 1, dk. Clemens-Trinity Drlg. Co.'s Chescher 1, spud in. Empire Oil & Gas Co.'s Wilson Dowdy 1, dk. J. O. Dore et al's William Appling 1, dr 800 ft. Grayburg Oil Co.'s Wells 1, dr. Gulf's Searcy Anderson 1, lcn; Tadlock 1, lcn. United North & South Dev. Co.'s Dix 1, dr 373 ft. O. W. Killam's Adams 1, spud in. Keifer's Dix 1, dr 2700 ft. Magnolia's Rand Miller 1, show at 2000 ft in Edwards; Echols 1, dr; Roamel 1, lcn; C. Zodler 1, dr about 500 ft. Mauldine Investment Co.'s L. V. Echols 1, dr 1600 ft. Miles and Adams' Zoboroski 1, sd at 2000 ft. Pagenkoff and Kennon's O. J. Halm 1, dr 1400 ft. Roxana's Denman 1, sd. Texas Co.'s Lemmy Anderson 4, lcn. Eugene Sights et al's Behring 1, testing at 2402 ft in Edwards.

JIM HOGG COUNTY — Alworth, Stevens and Hild's Garza 1, dr. T. J. Conway's Leyendecker 4, dr 1740 ft. Deep Rock Oil Co.'s Kelsey 1, standing 2510 ft. L. M. Holden's Jones 4, dr. O. W. Killam's Martinez 1, prep to spud in. Magnolia's Martinez 2, dr 80 ft; Hinnant 1, dr 2585 ft; Martinez 3, lcn. Geo. Marshall's Holbein 4, dr; Holbein 5, setting up. Moore-Milam Drlg. Co.'s Guerra 1, dr. Rendado Oil Co.'s Palacios 35, standing. Ryan Pet. Co.'s Indigo 1, plugging back to 4000 ft (no later report.) W. R. Shankle's Holbein 3, dr 100 ft. Texas Co.'s Bandera 1, dr. F. H. Zoch's King 1, lcn. (also listed in Duval).

KARNES COUNTY — Benedum and Trees' S. R. Cross 1, dr. J. O. Claypool's P. W. Tom 2, dr. Barnett's 1, dr.

KERR COUNTY — E. O. Turstill et al's Love 1, ru.

KLEBERG COUNTY—Humble's Kleberg 8, (Rosso tract), dr.

KENDALL COUNTY—Borget et al's Willie Haag 1, reaming below 500 ft. Sterling et al's 1, dr 400 ft in permian.

KINNEY COUNTY—A. Blum's Herbst 3, dr.

LA SALLE COUNTY—Sun Oil Co.'s Berry 1, dr 200 ft.

LIVE OAK COUNTY—Catlett & O'Neill (Trinity Drillers) Cattle Loan Co. 1, dr 1300 ft. Lightfoot et al's Lewis 1, sd at 2525 ft.

MAVERICK COUNTY—Rycade Oil Corp.'s Chittim 3, dr 5843 ft; Chittim 4, dr 5475 ft; Chittim 5, cleaning out at 1500 ft, making about 8 bbls.

MEDINA COUNTY—Pat Armstrong's Rutts 1, dr. TNT Drlg. Co.'s Mangold 1, dk; Noonan 1, resuming dr.

McMULLEN COUNTY — Sun Oil Co.'s Berry 1, dr about 400 ft.

NUECES COUNTY — Graham, Wallace, Yeakery & Patton's 1, blk 79, Roberts Farm, dr. Trinity Drillers et al's Thompkins 1, dr 3500 ft, dr to 4200 ft (no later report). Texas Co.'s Artemus Roberts 1, dk.

REFUGIO COUNTY — Benedum & Trees Oil Co.'s Rooke 1, dr 5300 ft. Dr. Hewitt's Cemetery 2, dr 2200 ft Houston Oil Co.'s Pratt-Hewitt-Rooke 10, prod. 40,000,000 cubic ft of gas, csg set at 3690 ft; Wilson Heard 9, set surface csg. Houston Gulf Gas Co.'s Ryal's 5, dr about 5350 ft; Shelly 6, sdtr at 3600 ft; Shelly 8, dr in about 3680 ft; Fannie Heard 8, dr in 3690 ft; Fannie Heard 4, (wo), completed at 3684 ft, no report on production; M. F. Lambert 1, dr; Tom Heard 3, spud in; Cummings 2, spud in; Morgan Shelly 2, spud in. Independent Oil & Gas Co.'s O'Brien 1, dr 5083 ft; Anna Reilly 1, dr 2390 ft; Claud Heard 1, dr 950 ft; Reilly 4, spud in; J. B. F. Heard 1-B, dk; Reilly 5, dk. Mission Drlg. Co's Mitchell 2, dr 3983 ft; Powers 2, dk; J. B. F. Heard 1, (wo), swabbing at 3640 ft; O'Donnell-Kinkendahl 1, dr; Eakridge-Heard 2, dr about 2800 ft; Fox 2, dr; Shelly 2, prod 30 bbls at 3661 ft; Shelly 3, set 8⅝-inch csg at 3649 ft. Morgan Oil Corp.'s City 3, dr; Fox 1, dr; Strauch 1, dr. Pearson Properties Swift 1, prod 450 bbls at 3696 ft; Fox 2, dr; Hornberg 1, dk. Refugio Oil Co.'s Murphy 1, prod 650 bbls at 3676 ft. Saxet et al's Serafino 1, dr 3200 ft; Holmes Heard 3, set surface csg. Sun Oil Co.'s Buckley 1, dr; Leisering 1, prod 300 bbls at 3698 ft; Leisering 2, dr in at 3670 ft Texas Co.'s Clint Heard 1, being completed.

STARR COUNTY — Smith Adams' G. B. Welch 1, dr. Milam Drlg. Co.'s Allen 5, dr.

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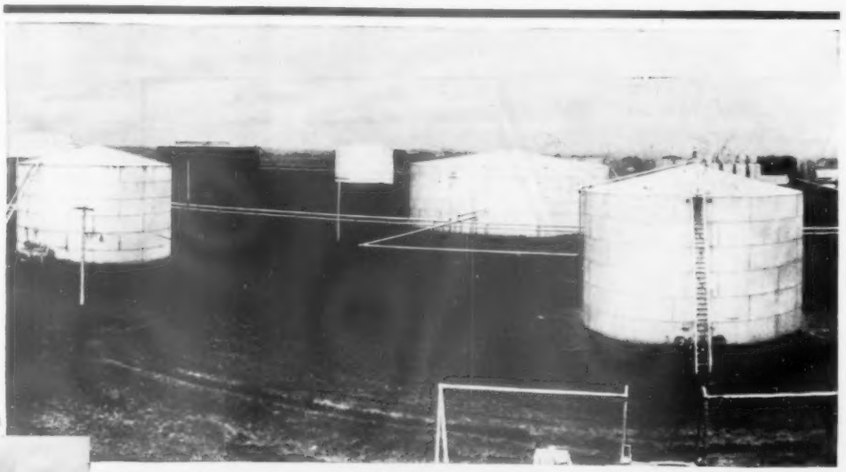

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Texas Co.'s Guerra A-4, share 305-D, porcion 67, dr.

VICTORIA COUNTY—Humble's Welder 1, dr.

VAL VERDE COUNTY — Phantom Oil Co.'s Ingram 1, dr 575 ft.

UVALDE COUNTY—Waldron & Welch's Berson 1, dr below 500 ft.

WEBB COUNTY—Foster Barnsley's Webster 8, dr. Houston Oil Co.'s Benavides 2-G, lcn; Benavides D-20, prod. 75 bbls at 2351 ft; R. Benavides 1, dr 480 ft; Benavides 2-D, dr. O. W. Killam's Bruni 14, dr 700 ft; Bruni 13, sd at 3152 ft. J. J O'Hern's Benavides 3, ru; Valdez 2, set csg at 2330 ft; M. Benavides 1, prep. to spud; Perez 1, dr about 800 ft. Magnolia Pet. Co.'s S. Perez 1, dr 2392 ft; D. Benavides 1, dk. L. W Nelson's Moglia 2, sd at 2800 ft. W. R. Shankle's Webster 2, dr.

WILSON COUNTY—Tidal Oil Co.'s Kulesza 1, dr water well, to spud in shortly. Grayburg Oil Co.'s Degler 1, temp. sd at 3430 ft. Trinity Drillers-Arkansas Nat Gas, Richter 1, lcn.

ZAPATA COUNTY—Blair & Son & Claggett's Trevino 2, dr 830 ft. Blankenship et al's Trevino 1, standing at 1510 ft; Garza 1, dr; Montemayor 1, dr 1100 ft. Buck and Coursey's Garza 1, standing at 1474 ft. Duval Oil Co.'s 1, dr. Hill et al's Vela 1, csg set at 1045 ft, bailing but water broke in, second attempt being made. Killam-Duggan's Cuellar 10, dr 800 ft; Cuellar 11, lcn. O. W. Killam's Flores 2, sd at 2500 ft; Cuellar 17, dk Magnolia Pet. Co.'s R. G. Martinez, dr. Marts and Beavens' Trevino 1, dr 2250 ft. South Texas Prod. Co.'s Joe Jennings 6, set csg at 1748 ft; Roy Jennings 2, dr 1150 ft. Shell Pet. Corp.'s Lopez 1, dr 125 ft John Pappas' Cuellar 2, dr 1529 ft.

ZAVALLA COUNTY—Geo. R. Smith and Everet Anglin's Johnnie Davidson 1, sd at 1600 ft.

OKLAHOMA

WOODS COUNTY—T 28n, R 16w, Sec. 14, Peerless et al's Cromwell 1, c nw ne, dr 200 ft.

GRANT COUNTY—T 28n, R 7w, Sec. 27, Gypsy's Bilderback 1, sec, dr 3300 ft. T 28n, R 4w, Sec. 12, Boucher et al, Dedmon 1, swc se, hfw 3105-30 ft, dr 3750 ft.

KAY COUNTY — T 28n, R 1w, Sec. 24, DeCamp & Lancer, Covey 1, sec ne, Wilcox 3456-3478 ft, hfw, sd 3860 ft.

WOODS COUNTY—T 27n, R 16w, Sec. 33, Sinclair, Share 1, c ne sw, fsh 5315 ft.

ALFALFA COUNTY—T 27n, R 11w, Sec. 12, Smith Bros., Forbes 1, nec se nw nw, sd 1420 ft.

GRANT COUNTY—T 27n, R 5w, Sec. 20, J. V. Bailey, Brewer 1, c sw se, r.o.g. sd.

HARPER COUNTY—T 26n, R 24w, Sec. 14, Sinclair, Howell 1, c sw sw, cored sand 5020-25 ft, dr 5666 ft.

GRANT COUNTY—T 26n, R 3w, Sec. 23, Otstot Dev. Co., Tapor 1, nec se, dr 540 ft.

KAY COUNTY—T 26n, R 2e, Sec. 32, J. A. Vincent et al, McNeal 1, nwc ne, sd 2795 ft.

WOODS COUNTY—T 25n, R 15w, Sec. 10, Bu Vi Bar et al, 1, sec sw, dr 5989 ft.

GRANT COUNTY—T 25n, R 4w, Sec. 22, Cowden, Vollmer 1, nec se ne sw, sd 5640 ft, tools in hole.

WOODWARD COUNTY — T 24n, R 17w, Sec. 32, Otstot, Simmons 1, sec, sd 1500 ft.

WOODS COUNTY—T 24n, R 13w, Sec. 18, Miller et al, Copenhaver 1, nwc, spudded and sd.

ALFALFA COUNTY—T 24n, R 11w, Sec. 14, Washoma, Acre 1, swc ne, dr 3960 ft.

GARFIELD COUNTY—T 24n, R 6w, Sec. 9, Pulse & Beamer, White 1, sec nw, hfw 4730-4800 ft, ur 5-inch 5556 ft, td.

WOODWARD COUNTY — T 23n, R 20w, Sec. 9, Harris & Haun, Wyatt 1, c se, hfw 4390-4400 ft, dr 4665 ft. T 23n, R 17w, Sec. 2, John Farrand, Belva 2, csl sw se, sd 1387 ft.

NOBLE COUNTY—T 22n, R 1e, Sec. 22, Peerless et al, Wentz 1, nwc sw, dr 1990 ft. Sec. 24, Gypsy, Dailey 1, swc ne ne, Wilcox 4698-4728 ft, hfw, dry and abn 5053 ft.

WOODWARD COUNTY — T 21n, R 21w, Sec. 25, Sharon, Elmore 1, swc, rig blown down, td 3025 ft. T 21n, R 19w, Sec. 15, Burgoyne Bros., Merklin 1, swc se ne, sd 1910 ft.

MAJOR COUNTY—T 20n, R 14w, Sec. 23, Keller et al, Horton 1, c ne ne, spudded and sd.

GARFIELD COUNTY—T 20n, R 4w, Sec. 10, Continental et al, Brown 1, c ne sw, lcn.

NOBLE COUNTY—T 20n, R 1w, Sec. 26, Magnolia, King 1, sec sw, water sand 3730-80 ft, hfn 5390-5410 ft, td, dry and abn.

BLAINE COUNTY—T 19n, R 10w, Sec. 13, Washoma, Phillips 1, c nw sw, sd 2945 ft.

LOGAN COUNTY— T18n, R 3w, Sec. 33, Haley & Consolidated Drlg. Co., Quier 1, sec sw, sd 3970 ft.

KINGFISHER COUNTY — T 16n, R 7w, Sec. 6, Galt-Brown, Boch 1, c nw se, (owdd), sd 6022 ft.

CANADIAN COUNTY—T 14n, R 6w, Sec. 9, A. D. Spears et al, Piatt 1, swc nw, sd 3223 ft.

OKLAHOMA COUNTY—T 13n, R 1w, Sec. 13, T. B. Slick, Martin 1, c nw nw, td 5640 ft, r.u.r.

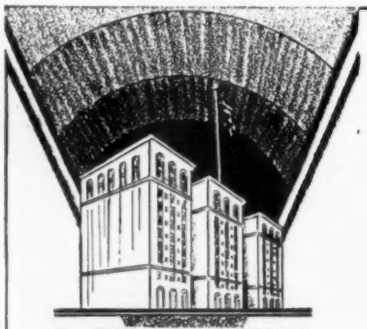
TEXAS COUNTY—T 1n, R 15 E. C. M., Sec. 25, Skaer et al, Hitch 1, nwc sd 250 ft.

PAYNE COUNTY—T 18n, R 6e, Sec. 4, Consolidated Drlg., Freeman 1, swc dr 3698 ft, water.

LINCOLN COUNTY—T 17n, R 5e, Sec. 7, Mote & Wheeler, McLaughlin 1, sec nw nw, dr 3410 ft. Sec. 16, Jilson & Kemp, School land 1, sec sw, rig. T 16n, R 5e, Sec. 1, Flynn-Morgan, Johnson 1, swc ne, dr 1785 ft. T 13n, R 6e, Sec. 21, Shell Pet. Corp., Pharris 1, nec nw, dr 1580 ft. T 12n, R 3e, Sec. 29, Phillips, Roberson 1, sec nw, dr 4895 ft.

OKFUSKEE COUNTY—T 12n, R 9e, Sec. 36, Henry, Harjo 1, nwc dr 2720 ft. T 12n, R 10e, Sec. 3, Sheppard et al, Shepperd 1, sec nw sw, ur 6-inch 3468 ft.

McINTOSH COUNTY—T 10n, R 13e, Sec. 16, Spring Valley, Carr 1, sec ne nw, 1M gas



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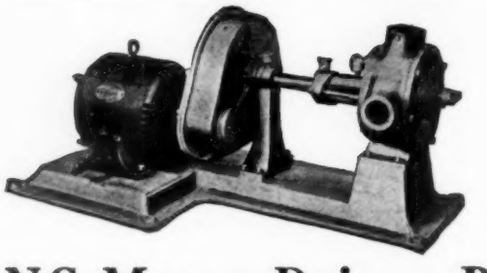

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2390-2429 ft, sd 2596 ft. T 10n, R 14e, Sec. 31, Jennings Bros., Crabtree 1, sec ne sw, dr 900 ft.

PITTSBURG COUNTY—T 9n, R 16e, Sec. 32, Pattison et al, McDuff 1, swc nw se, show oil 5446-70 ft, 1M gas 5464-80 ft, 5560 ft, fsh.

HASKELL COUNTY—T 9n, R 18e, Sec. 10, Marion Oil Co., Sanders 1, nwc ne sw, 2M gas at 1800 ft, sd 2692 ft.

LATIMER COUNTY—T 5n, R 18e, Sec. 15, Limestone O&G., Murray 1, swc 1½M gas 2518-30 ft, fsh 4050 ft.

OKLAHOMA COUNTY—T 12n, R 2w, Sec. 30, Magnolia, Noble 1, nw sw sw, show oil and gas 6362 ft, dr 6485 ft. T 11n, R 2w, Sec. 3, Ryan Consolidated Oil Co., Lawton 1, nec nw, rigging up rotary.

OKFUSKEE COUNTY—T 11n, R 7e, Sec. 6, Superior, Carolina 1, sec, plugging 4901 ft.

SEMINOLE COUNTY—T 10n, R 5e, Sec. 28, McCulloch et al, Luckett 1, nec nw, hfw, 4898-4904 ft, plugging. T 10n, R 6e, Sec. 12, I. T. I. O., Chatkey 1, swc ne, td 4795 ft, 3000 ft water, dry and abn.

HUGHES COUNTY—T 9n, R 12e, Sec. 29, Canady et al, Kanard 1, swc nw nw, sd 1275 ft.

POTTAWATOMIE COUNTY—T 8n, R 3e, Sec. 9, Cal Cul Oil Co., Wilson 1, nwc ne nw, td 5490 ft, hfw, dry and abn. T 8n, R 4e, Sec. 3, Superior et al, Bayliss 1, swc nw, dr 3790 ft. Sec. 9, Keister & Manning, Tibbes 1, nec sw, cemt 8-inch 4240 ft.

HUGHES COUNTY—T 8n, R 12e, Sec. 30, McGee Bros., Bird 1, sw se nw, dr 2850 ft.

CLEVELAND COUNTY—T 7n, R 1w, Sec. 15, Sooner Oil, Vandeveer 1, ne nw sw, sd 3120 ft.

POTTAWATOMIE COUNTY—T 7n, R 3e, Sec. 15, Amerada et al, Vineyard 1, nw ne ne, top viola 4766 ft, td 5093 ft, hfw, pb to 4830 ft.

CLEVELAND COUNTY—T 6n, R 1e, Sec. 20, Brownfield et al, Corbett 1, sec nw, rig.

POTTAWATOMIE COUNTY—T 6n, R 3e, Sec. 36, Sykes et al, Cook 1, swc nw ne, rig.

SEMINOLE COUNTY—T 6n, R 6e, Sec. 8, E. L. Harris, Harjoche 1, se ne se, td 4052 ft.

HUGHES COUNTY—T 6n, R 8e, Sec. 23, McCulloch et al, Moses 1, nw sw ne, dr 3735 ft.

POTTAWATOMIE COUNTY—T 5n, R 5e, Sec. 4, I. T. I. O., Philpot 1, nwc dr 2910 ft.

HUGHES COUNTY—T 5n, R 9e, Sec. 17, E. W. Whitney, Huddleston 1, sec sw, fsh job, 3935 ft, sd. T 5n, R 10e, Sec. 30, Erwin et al, Jones 1, sec ne, lcn. T 5n, R 11e, Sec. 15, J. J. Wright, Roberts 1, sec sw, r.u.s.t.

PITTSBURG COUNTY—T 4n, R 12e, Sec. 32, Kerr & Key, Tall 1, c nw nw, dr 3100 ft.

ROGER MILLS COUNTY—T 12n, R 24w, Sec. 23, Bucy & Stone, Williams 1, c sw, rig. T 11n, R 26w, Sec. 4, L. C. Hivick, Davis 1, c nw ne, sd 1850 ft.

CANADIAN COUNTY—T 10n, R 6w, Sec. 1, J. V. Bailey, Robinson 1, c ne nw, sd 150 ft.

BECKHAM COUNTY—T 8n, R 22w, Sec. 30, Carson et al, Denby 1, sw se ne, show gas 1249 ft, 1580 ft, td.

GREER COUNTY—T 6n, R 24w, Sec. 17, I. T. I. O. et al, Fee 1, c ne, td 1902 ft, reaming at 1600 ft.

CADDO COUNTY—T 6n, R 13w, Sec. 8, Abernathy & Brown, Horton 1, sec sd 380 ft. T 6n, R 10w, Sec. 26, English Drlg. Co., Carner 1, nwc sw 3465 ft.

HARMON COUNTY—T 4n, R 26w, Sec. 8, S. M. Stauffer, Caftleman 1, nwc se, sd 625 ft.

JEFFERSON COUNTY—T 7s, R 7w, Sec. 2, Superior, NeSmith 1, sw se se, dr 3827 ft.

McCLAIN COUNTY—T 5n, R 3e, Sec. 16, Homaokla Oil Co., Newson 1, se ne ne, hfw 2956-66 ft, dr 3222 ft.

JOHNSTON COUNTY—T 1s, R 7e, Sec. 29, Smith & Kinsley, Lane 1, sec nw, sd 2250 ft.

STEPHENS COUNTY—T 2s, R 4w, Sec. 21, Magnolia, Martin 1, swc dr 4590 ft.

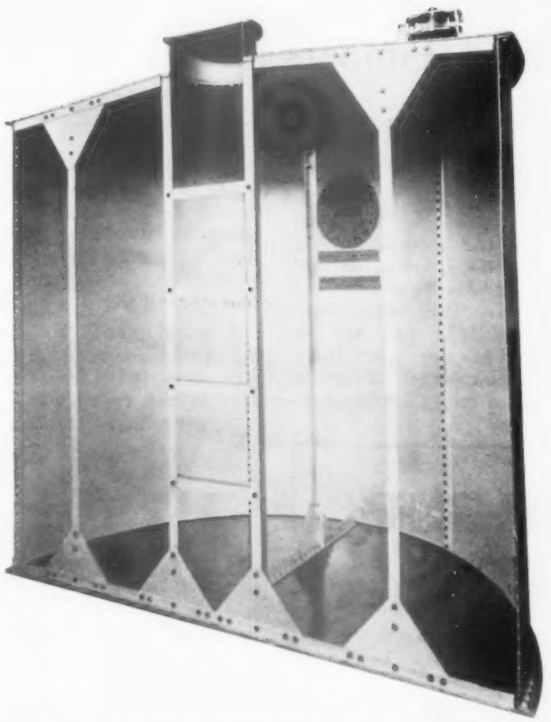
CARTER COUNTY—T 3s, R 4w, Sec. 23, J. A. Porter et al, Robinson 1, sec nw, dr 3525 ft. T 4s, R 2e, Sec. 32, Tex-Okla. Drlg. Co., Anderson 1, sec ne se, dr 890 ft.

MARSHALL COUNTY—T 5s, R 5e, Sec. 17, Jordan et al, Penn Mutual Life Ins., 1, nwc ne se, sd 700 ft.

BRYAN COUNTY—T 9s, R 9e, Sec. 36, W. C. Endicott et al, Craige 1, c nw ne, dr 1850 ft.

WOODWARD COUNTY—T 23n, R 17w, Sec. 23, Prairie & Transcontinental, Wilbur 1, nec, dr 5725 ft.

CLEVELAND COUNTY — T 10n, R 2w, Sec. 8, Prairie, Slick & Phillips, Sudik 1, c ne ne, show oil and gas 7403-05 ft, td 7408 ft, 300 ft water.



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Creosoted Timbers for Marine Construction Prove Economy

(*Continued from page 32*)

timbers in waters infested with marine boring organisms.

The Long Wharf of the Southern Pacific Railway at Oakland, California, was removed in 1918-19, and a careful inspection made of a large number of the piles removed. This piling was driven in 1890 and 1892, and had an average absorption varying from 10 to 15 pounds per cubic foot. From a close inspection of the above mentioned piles it was found that from 23 to 37 per cent had been attacked by marine borers and these generally in knots, or through injuries from abrasion, punctures, etc. Thus, after a life of 28 years, the large percentage of this creosoted piling was in good condition.

A paper by F. B. Ridgway, before the American Wood Preservers Association in 1914, describes the material used in two trestles built by the A. T. & S. F. Railroad across Galveston Bay, Texas, and the following points are noted as of interest.

The original structure was built in 1875 on creosoted piles. In 1895 this trestle was rebuilt, again using creosoted piles, but leaving many of the 1875 piles in place. The trestle was dismantled in 1912 and the piles pulled. The piles of the 1895 structure were all yellow pine, with the exception of a very few, which were red cedar. The pine piles were treated as follows: Steamed for 24 hours at 55 pounds pressure and 12 hours additional at 47 pounds to 50 pounds pressure. A four-hour vacuum was then maintained, after which creosote was injected and 24 pounds per cubic foot retained. The report of a careful inspection in 1905 showed no serious damage from marine borers, and when the structure was dismantled in 1912, after 17 years use, it was estimated that not over 10 per cent of the piles pulled were unfit for further use; in other words, nine out of every 10 could be driven again and were capable of sustaining a maximum load.

A wharf built by the Charleston Terminal Company at Charleston, South Carolina, about 1880, burned in 1921. This wharf was of treated pine piling, and an inspection in 1919, after about 40 years service, showed the majority of this piling to be still in a very serviceable condition.

Notation was made in the proceedings of the American Wood Preservers Association, 1915, of Pier No. 6 of the Chespeake and Ohio Railroad, at Newport News, Virginia, near Hampton Roads, just below the mouth of the James River, where marine borers are known to be very active, this pier consisted of piles originally treated with 12 pounds of dead oil of coal-tar per cubic foot, and at that time (1915) was in excellent condition, after 32 years of continuous service.

The Celeste Street Wharf, New Orleans, built in 1904, and in continuous service, was moved in 1924, and approximately 70 per cent of the piling salvaged and redriven, the other 30 per cent having been exposed at cutoff point to decay. This piling originally was given a treatment calling for the retention of 16 pounds of creosote oil per cubic foot.

Wood Preserving News, January, 1924, carries an article on the life of treated piling in piers at Norfolk, Virginia, calling attention to piers of the Norfolk and Western Railway Company, at Lamberts Point, Virginia, constructed in 1890 and 1892, and in very good serviceable condition at the time the article was written—thus, having given 32 years continuous service.

Recently the Board of Commissioners of the Port of New Orleans decided to remodel the present Press Street Wharf, and demolished the old wharf. The old wharf was built in 1911, of southern yellow pine, treated with 16 pounds of dead oil of coal-tar per cubic foot. Samuel Young, chief engineer in charge of this work, recently stated that all piles in the old wharf were being pulled with the exception of a few rows in front, and that they were salvaging practically 100 per cent of them. He further stated that in redriving the old piles it was found that they drove as well or perhaps better than new piles, having no great tendency to split. Two thousand piles have been salvaged so far and all of them will be reused.

Wood Preserving News, March, 1929, carries the following notations on the use of creosoted materials in foreign marine construction work.

The gates of the docks in the English port of Sunderland, which were pressure treated with creosote are free from decay, and marine borer attack after 20 years of service, while untreated wood in the same location is badly eaten by borers.

Piles given pressure creosoted treatment and used in the Port of Lourvik on the Southern Coast of Norway are in perfect condition after 20 years service.

CONCLUSIONS

In concluding, the following is quoted from the "Marine Piling Inves-

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ROYALTIES

18 Years in Texas

Reference: Mercantile Agencies and National Banks

Petroleum Building
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tigations", a report by the National Research Council.

Taking all the evidence available, the following recommendation will probably give efficient protection.

1. Treat air dried piles wherever possible.

2. Treat these with 18 to 30 pounds of creosote per cubic foot, depending on the width of the sapwood ring.

3. In the treatment use a pure distillate coal-tar creosote, conforming to specifications of the American Railway Engineering Association.

4. If the creosote be of the best quality; if the impregnation be thorough, and the timber be not damaged by handling or framing, there appears to be no question but that creosote impregnation is the most efficient impregnation method of protection in use at present.

Doherty Concern Enters Glasscock County Field

Big Spring, Texas.—The Arkansas Fuel Oil Company has acquired a one-half interest in two adjoining 80-acre leases on the J. W. Baker and J. J. Phillips farms in the Settles field, Glasscock County, from Atlantic Oil Producing Company and the Black Arrow Oil Company for a reported consideration of $500,000, one-half cash and the remainder payable from oil runs. The Kirby Petroleum Company is operating the property, and retains its one-half interest. The two leases are in the northwest quarter of Section 23, block 33, T&P Ry. Survey, T-2-S, with a completed well in the northeast and northwest corners credited with a daily potential production of 1510 and 780 barrels, respectively, from the 2200 foot lime.

The Arkansas Fuel Oil Company is a subsidiary of the Arkansas Natural Gas Company, a Henry L. Doherty concern, with headquarters at Shreveport, Louisiana. Production on the Baker and Phillips leases is limited to 40 per cent of the daily potential through proration restrictions, and the Cosden Pipe Line Company is running the oil for purchase.

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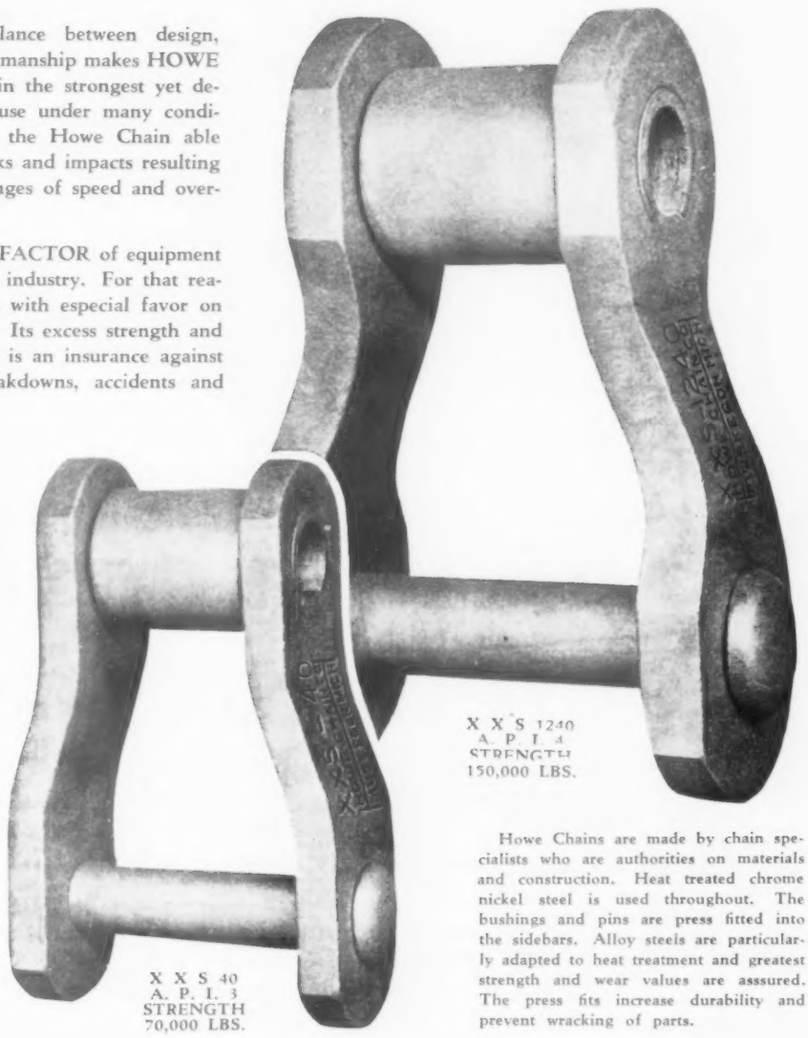

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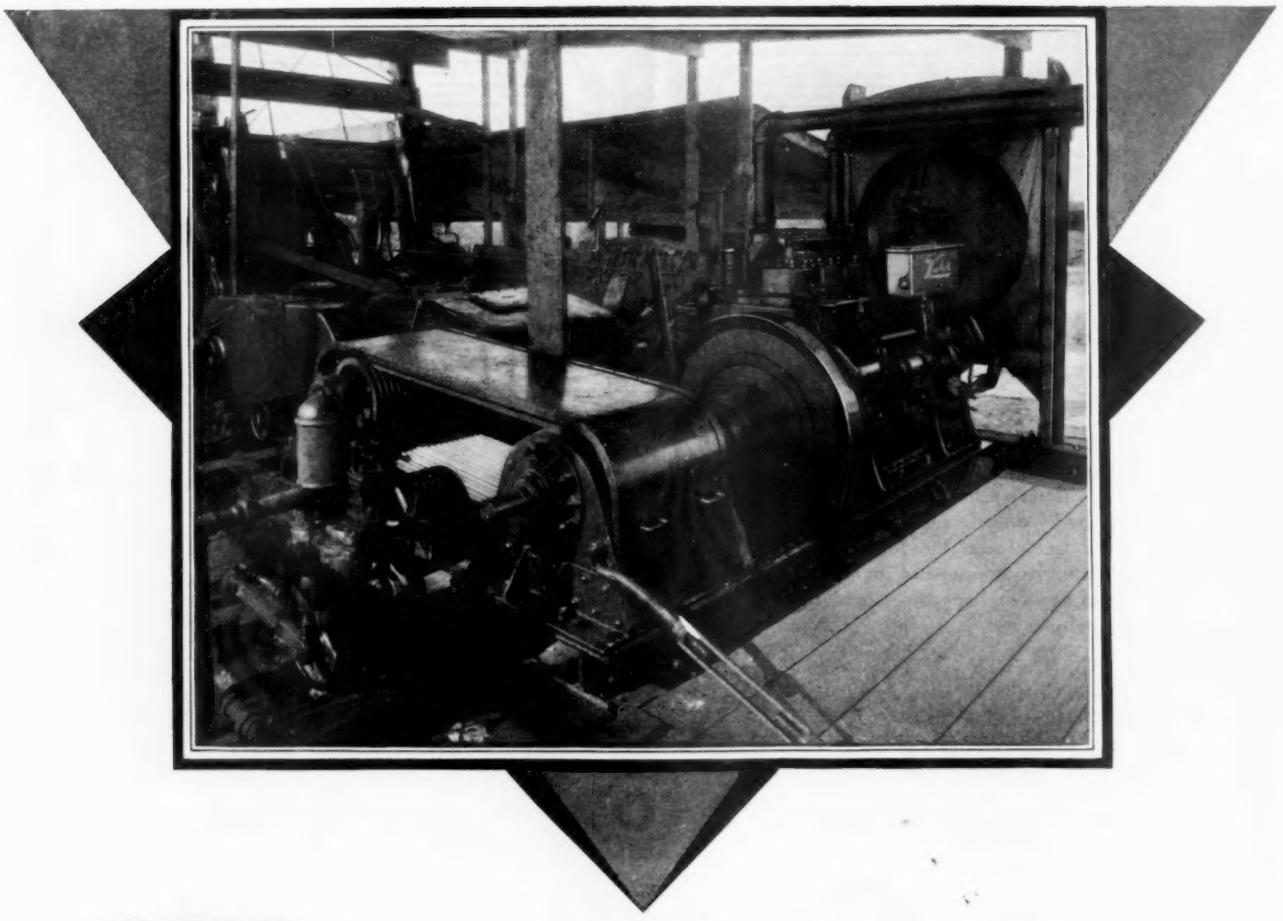

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Actual demonstrations in the field . . . with the simplicity and flexibility of steam as the standard of comparison . . . have more than proved that the Waukesha Great Six is an oil man's engine.

With its 275 horsepower . . . and more . . . the Great Six drives a mud-hog pump, operates the rotary and draw works, or runs cable tools with equal ease. And it has a great reserve of power *always ready* for the tough pull. Its ability to use natural gas or gasoline fuels equally well . . . together with the reliability and long life which have been built into it . . . make the Waukesha Great Six *a good investment* for drilling duty.

Interesting details are given in Bulletin No. 775. Write *Oil Field Equipment Division, Waukesha Motor Company, Waukesha, Wisconsin. Offices: New York, 8 West 40th Street; San Francisco, 7 Front Street. In the Oil Fields: C. F. Camp Co., Tulsa; Portable Rig Co., Houston; Bradford Supply Co., Bradford, Pa.*

981

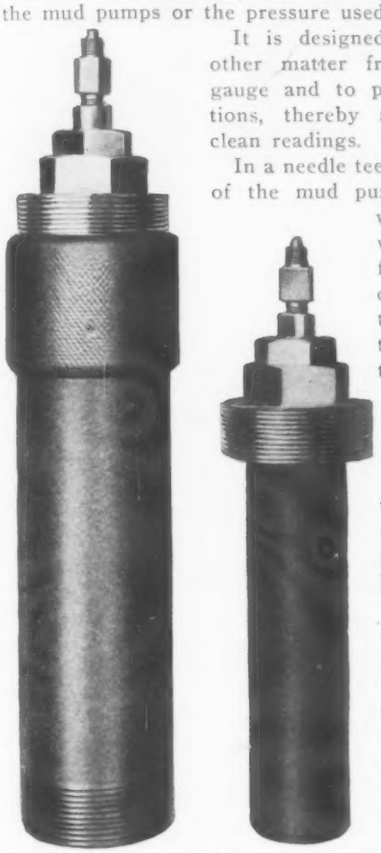
WAUKESHA ENGINES

NEW EQUIPMENT, CATALOGS, BULLETINS, BOOKS

Mudmeter

DRILLOMETER COMPANY

The Mudmeter, manufactured and distributed by the Drillometer Company, 507 Terminal Sales Building, Los Angeles, is used to give the operator the pressure from the mud pumps or the pressure used when cementing.



It is designed to prevent mud or other matter from getting into the gauge and to prevent needle oscillations, thereby affording steady and clean readings.

In a needle teed to the discharge line of the mud pump is a rubber bulb which is filled with clear water or with an anti-freeze mixture when necessary. The interior of the bulb is connected to through the pulsation throttle to the gauge.

In this way the pure liquid in the bulb goes into the gauge, while the mud pressure on the outside of the bulb sets up an equal pressure in the liquid within the bulb.

The pulsation throttle consists of a contracted passage of a special construction that offers a high resistance to sudden pulses sufficient to stop them, and no appreciable resistance to a slow uniform change of pressure.

Details may be had upon request to the manufacturers.

Single Row Radial Bearings

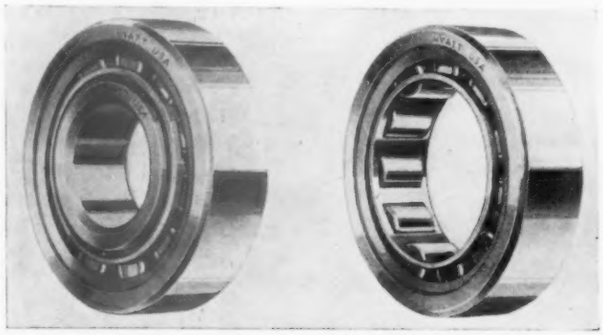
HYATT ROLLER BEARING COMPANY

Hyatt Roller Bearing Company of Newark, New Jersey, is now manufacturing a new line of single row radial bearings, made up of solid rollers. This line is not intended to replace the standard Hyatt Roller Bearing which uses spirally wound rollers, but is offered as a supplement to it, for positions in which space limitations exist, and loads beyond the capacity of ball bearings must be sustained.

The design employed is one in which the rollers are permanently retained with the outer race, the inner race being separable.

A separator, floating on the rollers, spaces them, and heat treated end rings retain them endwise within the outer race. The end rings and separator function to keep the rollers in proper alignment insuring positive contact along their full length. This full line contact of the rollers is to enable the single row radial bearings to sustain greater loads than can safely be carried by ball bearings of equivalent sizes which have only spot or point contact between balls and races.

The rollers and races of this bearing are made of chrome nickel alloy steel, and the end rings are of vanadium steel to eliminate wear by the ends of the rollers. The roller separator is so made that the pockets are parallel and equally spaced, to make a uniform load distribution on the rollers.



Hyatt single row radial bearing, shown with and without inner race

The bore, outside diameter and width of Hyatt single row radial bearings correspond to standard S. A. E. metric dimensions. They are interchangeable with all single row ball bearings of equivalent size and design to provide greater load capacity within the same space and increasing the efficient life of the installation.

The possible separation of this bearing into two parts, the inner race being removable, offers opportunities of developing more economical methods of assembling for all applications with or without the inner race. The roller ends are sufficiently rounded to facilitate assembly where the inner race is not used and both the outer and inner races are chamfered at one end.

It follows the theory that a roller of a length greater than its diameter has a much greater load capacity than the equivalent size ball for the reason that it provides line instead of spot or point contact and wider distribution of the load, thereby preventing bearing fatigue or fractures due to overloading.

Well Tester

G. & M. COOPER COMPANY

The G. & M. Company, Inc., Dallas, Texas, is now marketing a well tester, which runs on the drill pipe, and takes fluid samples of formations encountered by the drill.

The laminated packer is caught in top of the "rat" or core hole, to pack off drilling fluid at that point. After the packer becomes engaged, the weight of the drill pipe opens the valve automatically, to give the fluid in the formation below free and unobstructed passage into the empty drill pipe. The work of this tester is to get the results that would be obtained if the casing were set and the well bailed down to that point.

Upon lifting the drill pipe, the valve automatically closes, entrapping a sample of the fluid, which is brought out with the pipe.

It has a number of devices and attachments. One shows whether or not the valve opened. Another permits fluid to be circulated through the tool if desired. Another attachment permits the wall or big-hole testing when there is no rat hole. An outstanding feature is a by-pass designed to permit the packer to seat easily.

Swing

B. G. GOBLE

Made with bearings running vertically but submerged in oil, a new swing has been developed and now is being manufactured by B. G. Goble of Tulsa. The swing has a rain and dust proof covering and a quantity gravity feed tank extending above the level of friction.

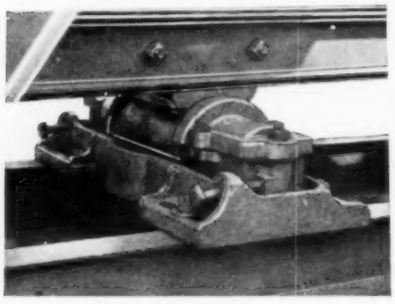


FIGURE 1

A vacuum is created in the tank by screwing in a plug and the oil feeds out slowly. The tank is air-tight and there is a sediment tank provided that receives cuttings, heavy oil and other heavy substances that usually settle away from the bearings.

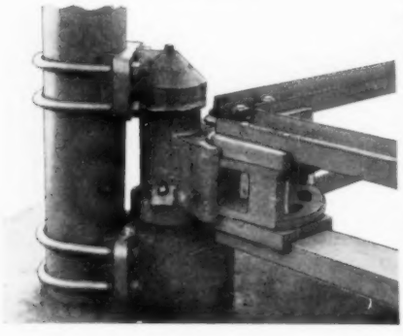


FIGURE 2

This swing also has novel features in its arms which are held up in merry-go-round fashion. This allows for longer centers, giving an easier pull by keeping the swing from getting into foul positions on the expansion and contraction of long rod lines. Another advantage of the long center is that the bearings work only half as much and travel half as far as the shorter center. All the swing bearings run in a bath of oil with the quantity vacuum gravity feed and sediment basin.

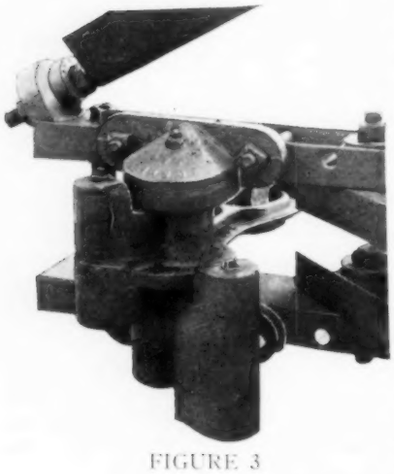


FIGURE 3

Figure 1 shows the main bearing for the Globe pumping jack. It can be used also on a walking-beam. Figure 2 is the main bearing for the Goble swing. Figure 3 is a T-link bearing. Each runs in a bath of oil, is rain and dust-proof and has a sediment tank or basin to hold heavy substances away from the working part.

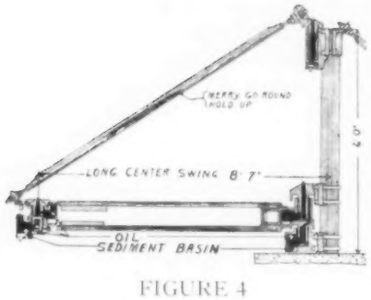


FIGURE 4

Figure 4 shows the long center swing which is adjustable to varying lengths and maintains itself in perfect support in motion.

More detailed information may be obtained from the manufacturer direct.

W. E. TAYLOR

W. E. "Bill" Taylor, formerly with Frick-Reid Supply Company, has recently joined International Derrick & Equipment Company to have charge of sales of the Ideco-Boykin rotary and other drilling and pumping equipment in the Oklahoma, Kansas and Rocky Mountain territory. He will maintain headquarters in Tulsa. He is a graduate of the Colorado School of Mines at Boulder. As an engineer he has specialized in rotary type of production machinery.

Val R. Wittich, Jr., was named foreign sales representative for the Reed Roller Bit Company, October 1, with headquarters at 150 Broadway, New York City. Wittich has had a long experience in the foreign representation of rotary tools, and will handle for his company the rock bit, rock core bit, reamer, the Reed wire line bit, the Barrett-Robishaw combination drilling-coring bit and the foreign sales on California Manufacturing and Engineering Company's entire line of products.

VAL R. WITTICH, JR.

H. A. Gray has recently succeeded C. J. Van Landeghem as manager of the special industries department, The Philip Carey Company, Lockland, Ohio. Gray, with R. B. Hall, manager of the oil industries department of the company, has returned to headquarters from Tulsa.

W. W. Spreng, manager of the petroleum sales department of E. I. du Pont de Nemours & Company, Inc., Philadelphia, attended the exposition at Tulsa October 8 to 12, and is now making an extensive trip over the Mid-Continent area, accompanied by H. H. James and E. Long, sales representatives.

Book on Arkansas Geology

BY CARLE H. DANE, U. S. G. S.

The Arkansas Geological Survey, Little Rock, Arkansas, under direction of George C. Branner, state geologist, has just published a book, designated as Bulletin 1, on the "Upper Cretaceous Formations of Southwestern Arkansas," a report by Carle H. Dane, associate geologist of the U. S. Geological Survey.

Mr. Branner says in the prefatory note: "This report provides detailed information concerning the characteristics, sequence and surface distribution of the various formations found in the Upper Cretaceous area of southwestern Araknsas, an area which includes portions of Clark, Pike, Nevada, Hempstead, Howard, Miller, Little River and Sevier Counties. A detailed knowledge of characteristics and sequence of these formations as determined by a surface examination is of direct value to an understanding of the geology of both the producing and potential oil and gas areas of Southern Arkansas. From a more general geological standpoint, this report is a contribution to the knowledge of the Upper Cretaceous beds of the Gulf Coastal Plain of Southern and Eastern United States."

The book is amply illustrated with photographs, maps and diagrams, and carries as separate supplements a large colored geological map of Cretaceous formations in Southwestern Arkansas, and a detailed table with correlations of deep test wells in part of Southwestern Arkansas.

The volume has a total of 215 pages, and is a durable, attractive cloth covered book.

Speed!

and

REMOTE CONTROL

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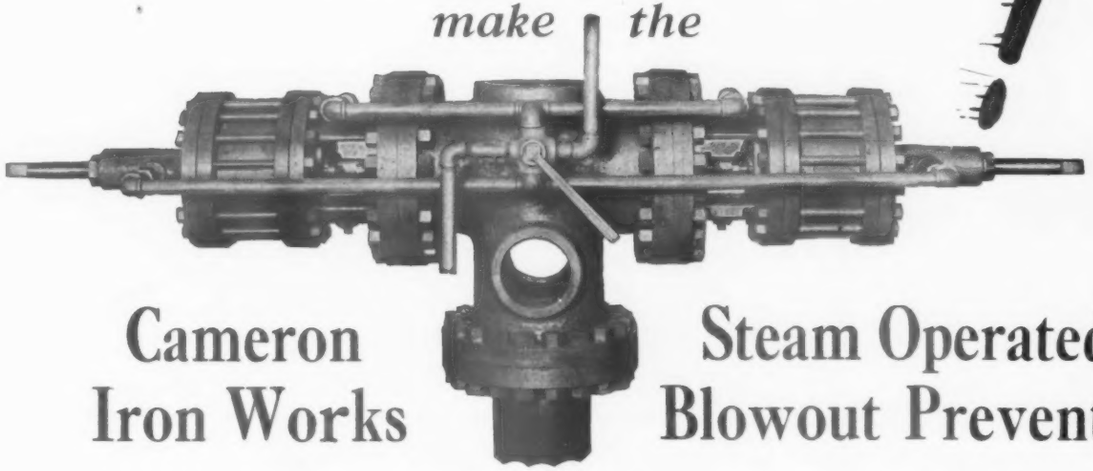


Cameron Iron Works Steam Operated Blowout Preventer

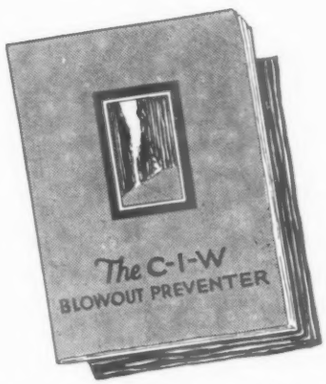
..your most formidable foe against Blowouts

Almost instantaneously with the opening of the 4-way operating valve the steel rams close around your drill stem and securely packs it off.

Steam from the boiler drives the steel rams around the drill stem and makes a tight and absolutely leak-proof circle of steel and hydraulic rubber packing, thus perfectly sealing up the hole without destruction of equipment or loss of gas pressure.

When shutting in a high gas pressure with the C-I-W Steam Operated Blowout Preventer, it is not necessary to go near the hole. The 4-way operating valve, which controls the closing and opening of the rams, is located at a distant point from the well, where it may be operated with safety and without endangering the lives of your men. A quarter turn of this valve allows steam to enter the cylinders and instantly close the steel rams, thus completely encircling the drill stem with packing which is backed by a solid wall of steel.

This preventer is made of toughest cast steel, and is tested and guaranteed to withstand a pressure of 2500 pounds per square inch.



A new booklet, just off the press, completely describes the construction and operation of this preventer. We shall be glad to send it to you upon request.

CAMERON IRON WORKS INC.

HOUSTON TEXAS

California Distributor: PETROLEUM EQUIPMENT CO., 2800 S. Alameda St., Los Angeles, Calif.

Compare With Others!

Appleman . . . 35 bits
Other make . . 71 bits
. . . to reach 4700 ft.

Note that straight water courses lead direct to cutting edges. Maximum cooling effect. Cuttings rapidly broken up and washed away in solution. This means NO CHOKING UP.

The blades are formed concavely favoring sharp cutting edges for both bottom and side of hole. Attained by hard facing, permitting wear on back to retain cutting edges. Hence the well known feature of the Appleman Gumbo Bit—

SELF-SHARPENING

(Patent Applied For)

Specially designed cutting edges give SPEED. A rapid mud mixer. Less spudding required. Cuts side wall as it drills. Well prepared side wall. Holds gauge longer. Reaming rarely necessary.

Records show that this bit makes an average of 60% to 100% more hole in the same given time in all formations excepting rock. Less labor. Less expense.

Names of prominent users will be mailed upon written request.

WRITE FOR COMPLETE INFORMATION

B. K. APPLEMAN
BEAUMONT, TEXAS

Squeaks from the Bull Wheel

"A scientific expedition from the University of Chicago was sent to one of the Southern States to study an eclipse of the sun, and the day before the eclipse the expedition's leader said to the old colored man who cooked for him:

"Hannibal, if you watch your chickens tomorrow morning, you'll find that they'll go to roost at 10 o'clock."

Hannibal chuckled; he thought he was being kidded; but at 10 the next morning, sure enough, day turned to night, and the chickens all roosted.

Hannibal, in great awe, looked up the professor.

"Perfessor," he said, "how long ago you know dem chickens go to roose?"

"About a year ago. Why?"

"If dat don' beat all!" said Hannibal. "Perfessor, a year ago dem chickens wan't even hatched."

Hiram walked four miles over the mountains to call on his lady fair. For a time they sat silent on the sofa in the parlor, but soon the spell of the evening had its effect and Hiram sidled closer to her and patted her hand.

"Mary," he began, "you know I got a clearin' over thar an' a team an' wagon an' some hawgs an' caows an' I calc'late on buildin' a house this fall, an'——."

Just then he was interrupted by Mary's mother in the kitchen.

"Mary," she called in a loud voice, "is that young man thar yit?"

Back came the answer, "No, ma, but he's gettin' thar!"

A hail fellow well met is Dr. William P. Rothwell, Pawtucket, Rhode Island, and a generous host because he is always paying meal checks or "setting 'em up" to the crowd. On such occasions he always insists "this is on me," until these words have become a sort of greeting whenever he is around. Now he has had them chiseled on a large boulder which has been placed on his cemetery lot, ready to be rolled on his grave when the time comes. The good doctor wants no mourning among his friends when he is gone. He hopes the epitaph, "This is on Me," referring to the boulder on his grave, will bring smiles instead of long faces, and it probably will do that.

During a hold-up in Chicago, according to S. H., a young stenographer was grazed by a bullet. Thinking she was dying, she dictated a farewell note. "Write to Johnnie," she whispered. "Give him my true love and best regards. Carbon copies to Harold, Fred and William."—Boston Transcript.

"Need any more talent for your motion picture dramas?"

"We might use you. Had any experience at acting without audiences?"

"Acting without audiences is what brought me here."

"George, it's a burglar!"

"Sh'h, don't move, maybe he can get that window up; it's the one we haven't been able to open since the painters left."

A highly inebriated man once boarded an English railway train and finally spied a vacant seat. Stumbling toward it, he asked the other occupant to move along, a request which was reluctantly granted. The man then said:

"Say, aren't you the lord chief justice?"

Receiving no answer, he waited a few minutes and repeated the question, to which the man replied in the affirmative with much reserve.

"Say, Mr. Justice, you think you know everything, but I know something you don't know. My wife is your wife's washerwoman, and I am wearing one of your undershirts."

"Sorry, madam, but your boy hasn't a brain in his head."

"Oh, doctor! To th-th-think there would be a statistician in our f-f-family!"

"I don't believe in canned talk for salesmen, y'understand. Give me a chance, y'understand, to use my own talking ability, y'understand."

I say, doctor, don't you think it would be a good idea if I were to pack up and go to some place where the climate is warmer?

Isn't that just what I've been trying to prevent?

"Wonder if you would mind doing me a favor."

"What is it?"

"I noticed you were sitting in seat No. 10, and am presuming you have that as your lower berth."

"Well, my wife isn't feeling well. She has the upper over you, and inasmuch as she is quite a large woman, I am wondering if you would mind changing berths with her for the night. Wouldn't ask, you know, excepting, as I said, she is a large woman and not feeling at all well."

"Are you occupying the same berth with your wife?"

"Oh, no."

"Well, what is your berth number?"

"Lower five."

For a moment there was silence.

"You see the row of poplars on the opposite bank, apparently at equal distances apart?" said a stranger to a group of people standing by a river. "Perhaps some of you with keen eyes can tell which two trees are farthest apart?"

The group took a critical look at the trees, and each member selected a different pair. Finally, after much discussion, an appeal was made to the stranger to solve the problem.

"The first and last," he said as he walked away.

B. B. Bros.
ALL STEEL HAND HOIST
TRADE MARK
SEATTLE, U.S.A.

EFFICIENT

You will marvel at the efficiency with which the B. B. Bros. Hand Hoist translates hand power into a great mechanical pull that hoists heavy construction or equipment with perfect control. Provides an efficient, direct way to handle any emergency hoisting work.

Weight 110 lbs.

Capacity FIVE TON STRAIGHT LINE

Size 16x17x13" High

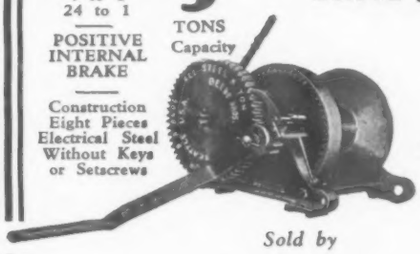
Two Speeds 4 to 1 24 to 1

POSITIVE INTERNAL BRAKE

Construction Eight Pieces Electrical Steel Without Keys or Setscrews

5 TONS Capacity

PRICE $80



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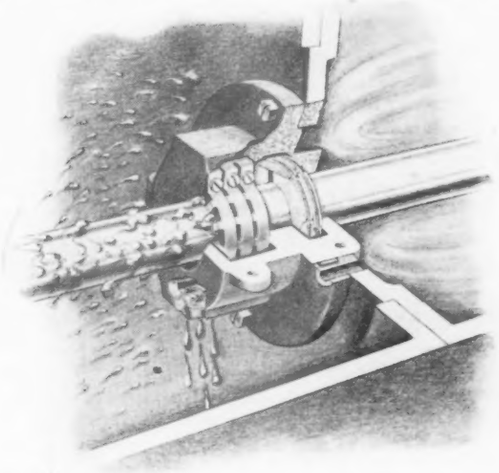

by using
Garlock Oil Return Packing
for
Gas Engines Air Compressors
Gas Compressors Steam Engines
of the
ENCLOSED CRANK CASE TYPE

Replace the inefficient Oil Wiper on your Gas Engine, Air or Gas Compressor or Steam Engine of the enclosed crank case type with Garlock All Metal Oil Return Packing. It will wipe every drop of oil from the piston rod and return it freely to the crank case. This packing is also designed to take care of vacuum and low pressure on certain types of power cylinders.

Savings Made by Installing Garlock Oil Return Packings

GAS ENGINES

1. Greatly reduces the amount of oil consumed.
2. Eliminates oil being deposited on discharge valves and valve chambers.
3. Checks discharge of oil through the exhaust.
4. Stops forming of carbon deposits and oxidation.

AIR and GAS COMPRESSORS

1. Greatly reduces the amount of oil consumed.
2. Eliminates oil being deposited on discharge valves, valve chambers, pipe lines and receivers.
3. Checks oil from being discharged by the cylinder into the compressed air and gas.
4. Stops the forming of carbon deposits and oxidation.

STEAM ENGINES

1. Greatly reduces the amount of oil consumed.
2. Stops the emulsifying of the lubricating oil.
3. Eliminates the inconvenience of having oil in exhaust steam where the steam is used for process work or radiation.

THE GARLOCK PACKING COMPANY
PALMYRA, N. Y.

Manufacturers of "Quality Controlled" Mechanical Packing

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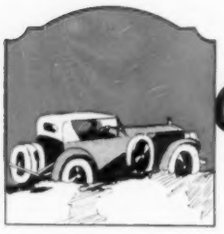

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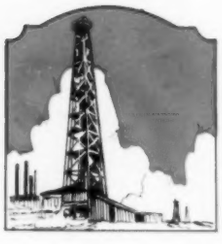

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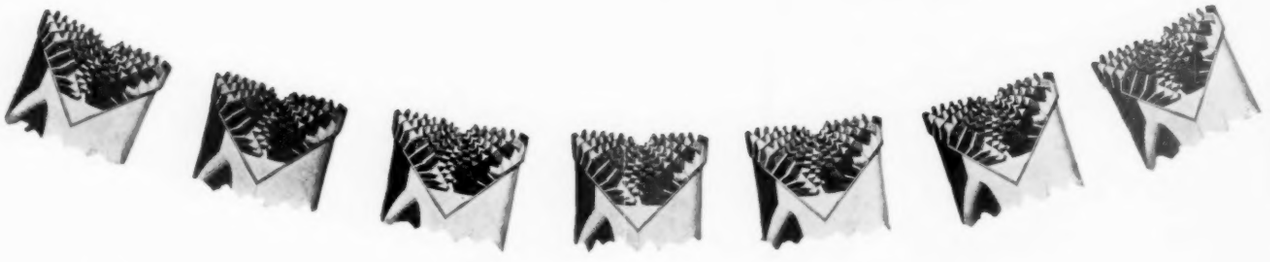

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